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ABSTRACT

This document begins with a brief overview of what assessment is, including a definition, purpose, brief history, and important process considerations in creating a successful and effective assessment effort on each campus. The three key questions in creating an effective assessment for each school are: (1) what do faculty members expect students to learn; (2) can it be demonstrated that students have learned; and (3) how can the results of the assessment be used to help student learning. There are two modes of assessment: direct assessment and indirect assessment. The document explores various methods and tools in carrying out assessment of student learning outcomes. Four key areas of student learning general education, program/major, basic skills, and students and academic support services. Issues of access and equity are discussed in the last section of the report and are essential components of an effective assessment program. It is stressed that assessment is a never-ending process that must provide ongoing feedback to help improve student learning and insure student success. The document concludes with a list of definitions, a bibliography, including websites, and a variety of examples of assessment related materials for two-year colleges. Contains 87 references and 7 appendices. (MZ)

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A HANDBOOK ON OUTCOMES ASSESSMENT

FOR TWO YEAR COLLEGES

Edward A. Morante
College of the Desert

Spring 2003

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Prologue

This Handbook on Outcomes Assessment is written with direct support from a grant from the Fund for the Improvement of Instruction (FII) given to College of the Desert by the California Community College Chancellor's Office.

The Handbook begins with a brief overview of what assessment is, including a definition, purpose, brief history and important process considerations in creating a successful and effective assessment effort on each campus. The Handbook then explores various methods and tools in carrying out assessment of student learning outcomes (SLO's).

The next four sections of the Handbook address four key areas of student learning: general education, program/major, basic skills and student and academic support services. A fifth section addresses issues of access and equity.

The Handbook concludes with a list of definitions, a bibliography, including websites, and a variety of examples of assessment-related materials for two year colleges.

It is the intention of the author to keep this Handbook current by adding additional new materials and examples as they become available. Suggestions and submittals should be sent to the author at: emorante@collegeofthedesert.edu

This Handbook arose out of discussions surrounding the California Assessment Institute (www.ca-assessment-inst.org). The author wishes to thank the members of the CAI Task Force for their support and suggestions, especially: Darlene Pacheco (AACJC), Diane Ramirez (College of the Desert), Fred Trapp (Long Beach CC), Bill Scroggins (Modesto JC), Julie Slark (Rancho Santiago District), Linda Umbdenstock (Long Beach), and Judy Walters (Peralta Community College District).

Thank you also to Maria Sheehan, President of College of the Desert, for her support of this effort at our college. Special thanks to Chris Nelson, my colleague and friend at COD, and to Peter Ewell of NCHEMS and James Anderson of North Carolina State University who took the time and effort to provide very useful feedback and suggestions to make this Handbook better. And thanks to Amy DiBello, COD English instructor, for her editing, and to Sharon Bentzen at COD for her significant clerical assistance in this and many other projects.

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E.A.M.

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EXECUTIVE SUMMARY

The key questions in creating an effective assessment effort on each campus are:

1. What do faculty members expect students to earn?
2. Can it be demonstrated that students have learned?
3. How can the results of assessment be used to improve student learning?

Assessment is:

- the systematic collection of data and information across courses, programs and the institution, an integral part of teaching and learning used to help both, and an essential component of a college's mission

Its **Function** is:

- to focus on student learning outcomes (SLO's), but also includes process, especially in seeking ongoing improvement
- to demonstrate and improve student learning and student success
- not to serve as personnel evaluation;
- to facilitate accreditation, accountability and institutional effectiveness

Modes of Assessment: A comprehensive and effective assessment program should include both direct and indirect measures.

- **Direct assessment**: the measurement of actual student learning, competency or performance. Examples include essays, tests, speeches, recitals, capstone experiences and portfolios.
- **Indirect assessment**: the measurement of variables that assume student learning such as retention/persistence, transfer and graduation rates, and surveys.

Four Principal Areas of Learning to Assess:

1. **General Education**: may include such skills as writing, critical thinking, problem solving and quantitative analysis as well as such content areas as: arts and humanities, mathematics, science and social science
2. **Program/Major**: includes the competencies expected of students in achieving a certificate/degree beyond basic skills and in addition to general education

3. **Basic Skills**: reading, writing, ESL and mathematics

4. **Student Services/Academic Support Services**: includes both the affective outcomes defined by a college and the expected outcomes of student programs including EOPS, CARE, DSPS, counseling, tutoring, learning center, etc.

Effective Assessment Programs:

An effective assessment program should include a component addressing both **access** (how well a college is serving its defined community) and **equity** (how well a college is achieving successful outcomes for different groups of students such as race/ethnicity, gender and age).

Assessment should be implemented at the course, program and institution level. Each institution needs to decide for itself where and how to begin. Some institutions will benefit from beginning at the course level, while most will probably be better served by beginning at the program or institution level. There are advantages and difficulties at each level.

The assessment process must include significant faculty involvement and leadership and be strongly supported by administration at all levels. Assessment should be institutionalized, therefore ongoing and cyclical in particular aspects. The use of a coordinating committee is important, as is the use and integration with such ongoing college efforts as: program review, matriculation, institutional research, Partnership For Excellence (California), and accreditation (both institutional and program). Creating an assessment effort devoid of other ongoing programs and institutional efforts is counterproductive and expensive in both time and money.

To be effective at the institution level, assessment must provide **ongoing feedback** to help improve student learning. Embedding assessment efforts into courses assists in student motivation and performance. Utilizing existing data bases, tests (both standardized and home grown), sampling techniques and local expertise (e.g. the institutional researcher) are important aspects of a successful assessment effort. Taking advantage of what has been attempted, learned and accomplished by others is very helpful.

Like instruction itself, assessment is never ending hard work that is an essential component of student learning and student success; it requires extra effort campus-wide. Accepting this fact is helpful and motivating. And, once assessment activities are in motion, it is crucial to use the results to improve student learning.

A Handbook on Outcomes Assessment for Two-Year Colleges

Edward A. Morante

College of the Desert

Introduction

What do faculty members expect students to know and to learn? How successful are our students? How is "success" defined? How can we demonstrate what our students have learned? How well have they learned? These and similar questions are at the heart of the teacher's and educator's mission. Answers to these questions form the essence of what we shall call "assessment".

This Handbook is a hands-on, down-to-earth, nuts and bolts tool for assessment. While this Handbook will include a brief history of the "modern assessment movement," it is not intended as a philosophical treatise, nor as a thorough compendium of assessment activities. The Handbook is intended to provide guidelines for assessment, including definitions and examples, as well as resources and links to additional information on assessment.

The purpose of this Handbook on Outcomes Assessment is to assist two year college faculty and staff to develop, organize, implement and evaluate a successful assessment effort, and to put assessment to continuous use to improve student learning and student success. This Handbook emphasizes beginning a campus assessment effort at the program and institutional level although the definitions, areas to be assessed, processes, and tools are included for all three levels.

What is Assessment?

The American Association of Higher Education (AAHE) organized a cross-section of assessment "experts" under the leadership of Tom Angelo, former director of the AAHE Assessment Forum. This task force created the following definition of assessment which was widely discussed, debated, critiqued and amended for about a year before consensus was reached:

Assessment is an ongoing process aimed at understanding and improving student learning. It involves making our expectations explicit and public; setting

appropriate criteria and high standards for learning quality; systematically gathering, analyzing and interpreting evidence to determine how well performance matches those expectations and standards; and using the resulting information to document, explain and improve performance. When it is embedded effectively within larger institutional systems, assessment can help us to focus our collective attention, examine our assumptions, and create a shared academic culture dedicated to assuring and improving the quality of higher education. (Angelo, T., 1995, p.7)

Angelo emphasizes several aspects of this definition:

1. The focus of assessment should be on student learning.
2. Setting expectations, criteria and standards is essential.
3. Evidence (data) must be systematically collected and used to improve (student) performance.
4. Assessment should be ongoing and institutionalized and become part of the accepted culture of the college.
5. Assessment helps to ensure and improve quality.

Thus, assessment is important because it helps to *demonstrate* and *improve* student learning and student success. See Appendix G for the AAHE (American Association for Higher Education) Assessment Forum Nine Principles of Good Practice for Assessing Student Learning.

Other Definitions of Assessment

Assessment also has been used to describe a process of collecting information (usually including basic skills placement testing) to determine the reading, writing and math skills of entering freshmen. In this basic skills use of the term, assessment is part of a comprehensive developmental education program (part of Matriculation in California community colleges) and is considered an input measure. In contrast, the definition of assessment used in this Handbook has a considerably broader context than basic skills and has much more of a focus on *outcomes* of student learning.

In addition, assessment has been used as part of the term "classroom assessment" originally conceived by Angelo and Cross (1993). Classroom assessment is a series of teaching methodologies available to improve teaching and learning within a particular classroom by an instructor. For example, a common classroom assessment technique is the "one minute assessment" where the teacher at the end of a class asks the students to describe such things as: "what was learned most in this class" or "what aspect of this class was still most confusing to you". This information can assist the instructor in better understanding both the effectiveness of the class and what area(s) he/she might need to reinforce at the next class. In using classroom assessment, no attempt is made to evaluate student learning in a broader context – or to grade students. See Bibliography for several references on classroom assessment.

Institutional Effectiveness

Sometimes the term institutional effectiveness is used interchangeably and/or confused with assessment. Generally, institutional effectiveness is a term used by various components of the institution or the institution itself to review how effectively goals are achieved. Sullivan and Wilds (2001) provide a useful definition:

Effectiveness is the evaluation of performance and related actions involving concepts based on the following:

- *Accomplishment of the institutional mission*
- *A reflection of the institutional vision, philosophy, goals and objectives*
- *An interpretation of the environment*
- *Data-based historical review of institutional accomplishments, weaknesses and aspirations*
- *Preparation, collection, and interpretation of data by institutional staff and faculty*
- *Involvement of faculty in developing and evaluating the curriculum and in evaluating student performance as it relates to the curriculum*
- *Involvement of senior line officers in interpretation and use of pertinent data and information*
- *Leadership of the president in defining and communicating institutional priorities*
- *Involvement of the Board in developing and approving policy*
- *Success of the president and the board in obtaining resources*

In contrast, as used in The Handbook, assessment will focus almost exclusively, on student learning outcomes (SLO'S), expected student performance by the faculty at the completion of the course, the program, or the degree/certificate/institution.

History of Assessment

Without a doubt, assessment has been a part of higher education from the start. Why then the fuss? Arguably, the current focus on assessment, especially outcomes assessment, began with the federal report, A Nation at Risk in 1983. This U.S. Department of Education report decried the mediocrity of the American educational system stating that if another country had done to us what we have done to our educational system, we would have declared war. While this report focused on K – 12 education, it was followed by similar reports on higher education raising questions about student learning and the effectiveness of our colleges and universities. For example, in 1984, the National Institute of Education issued Involvement in Learning which called for increased emphasis on undergraduate teaching and learning, concluding: "Institutions should be accountable not only for stating their expectations and standards but for assessing the degree to which those ends have been met… They should make a conscientious effort to acquire and use better information about student learning, the effects of courses, and the impact of programs." (p. 21)

In 1986, the National Governors Association issued "Time for Results which directly connected the interests of state governments in higher education by emphasizing that

successful economic development, international competition, school reform, and teacher preparation all depend on excellence in undergraduate education. Among the eight challenges to the higher education community was the following: "Improve assessment of students and institutional performance."

A number of states (e.g., Tennessee, Virginia, Missouri) heeded the call and created statewide assessment efforts for all public colleges and universities in their states. Across the country, many individual institutions (e.g., Alverno, Truman, James Madison, Kings, Sinclair) made assessment an integral part of their teaching and learning. The federal government has also significantly increased its focus on assessment, enhancing IPEDS (the Institutional Postsecondary Educational Data System, a national databank on student and college characteristics), as well as a concerted effort to add outcomes assessment to a variety of programs including grants and accreditation.

In many areas of the country, the principal motivation for focusing on assessment activities has come from accreditation agencies, both regional and subject areas. These agencies have been spurred by the federal government which in 1989 required assessment activities including outcomes to be an integral part of regional accreditation standards. Failure to adequately address this issue would jeopardize the agencies' charter to accredit institutions in their region. In turn, the absence of such accreditation would prevent any federal funds, including grants and student financial aid, from flowing to those institutions. SACS (the Southern Association of Colleges and Schools) was the first regional accrediting agency to establish this emphasis on assessment more than 15 years ago.

California Community Colleges

Today, there are at least three primary external forces impacting assessment in California community colleges: the State, the regional accreditation agency, the Accrediting Commission for Community and Junior Colleges (ACCJC) and the California Assessment Institutes. Several years ago, the Chancellor's Office for the Community Colleges reached an agreement with the governor and the legislature to create Partnership For Excellence (PFE). This agreement provided additional state funding to all community colleges in California based on FTES in conjunction with achievement of system-wide output improvements over time in five areas: basic skills, course completion rates, graduation rates, transfer rates, and economic development (workforce training). The emphasis on system-wide results in the current law calls for statewide improvements, while seemingly, holding harmless any individual institution.

ACCJC requires, in its current standards, that every institution create "a climate of evidence" as part of its accreditation self-study. Recently, ACCJC has revised accreditation standards increasing the need to carry out assessment and provide data and other evidence of student learning and institutional effectiveness. These new standards, which will go into effect, beginning with institutional self-studies in 2004, place greater emphasis on demonstrating outcomes. These new standards also bring ACCJC closer to those standards required by other regional accreditation agencies. (See the Southern Association of Colleges

and Schools (SACS) and The Higher Learning Commission (North Central Association of Schools).

The California Assessment Institutes (CAI) provide a third major emphasis for assessment activities at California community colleges. In 1997, a group of interested faculty and staff from several colleges and constituencies began hosting a series of statewide Institutes on assessment. Funded by the Chancellor's Office and attendee registration fees, and supported by ACCJC, the Research and Planning (RP) group and several California community colleges, these institutes have focused on helping faculty and staff understand what assessment is and can be. This Handbook on Outcomes Assessment is one direct outcome of these CAI's intended to provide, in writing, a tool for understanding assessment and developing and implementing a successful assessment program on campus.

Student Learning Outcomes (SLO'S), Domains and Rubrics

As with any endeavor, assessment has its own terminology. Many definitions are included throughout this Handbook with a compilation listed on pages 38 – 43. Three terms, in particular, are essential for understanding what assessment is and how to implement a successful effort. These are:

Student Learning Outcomes (SLO's): the competencies and skills expected of students as they complete a course, program or institution.

Domain: a set of skills or subskills in a particular educational area; for example, the specific skills that make up algebra or critical thinking.

Rubrics: a set of scoring guidelines for evaluating student's work. Rubrics make explicit the standards by which a student's work is to be judged and the criteria on which that judgment is based. (See Appendix D)

Methods of Assessment

Assessment methods can be divided into two main categories: direct and indirect.

A. **Direct Assessment** is the measurement of actual student learning, competency and behavior. Lopez (1999) listed several examples of direct measures of student learning:

- capstone experience
- portfolio assessment
- standardized tests performance on national licensure, certification or professional exams

- locally developed tests
- essay questions blind scored by faculty across the department, division or college
- qualitative internal and external juried review of comprehensive senior projects
- externally reviewed exhibitions and performances in the arts
- external evaluation of performance during internships based on stated program objectives

Lopez states that "direct measures of student learning yield useful information about the *value added* to a student's learning … especially when the results from multiple measures are triangulated and are compared with (1) baseline data and/or with (2) data from other measures taken over time." (Lopez, 1999) (See the Definitions section below for more information on "value-added".)

Indirect Assessment examines student performance or behavior using criteria which, if accomplished, assume learning has taken place. Lopez (1999) states, "many sources of data, if used alone, are inadequate measures of student learning. However, some of these sources, when used to supplement direct measures, provide information that may enrich or illuminate aspects of what the direct measures tell us about students' academic achievement." She lists the following as examples of indirect measures of student learning:

- alumni, employer, and student surveys;
- exit interviews of graduates and focus groups;
- graduate follow-up studies;
- retention and transfer studies;
- length of time to degree;
- entering test scores;
- graduation rates and transfer rates;
- job placement data.

Both direct and indirect measures of assessment should be used for an effective assessment program.

Purpose of Assessment

The principal purpose of assessment is to demonstrate and improve student learning and student success. To this purpose, assessment can:

1. Improve how well and what we teach – and what we expect students to learn;
2. Provide information for improving learning;

3. Focus on process as well as on inputs, outputs and outcomes;
4. Actively involve faculty, staff and students;
5. Use multiple and varied measures;
6. Be carried out at various key points in the educational process;
7. Provide feedback to those most affected; and
8. Be an intrinsically educational activity.

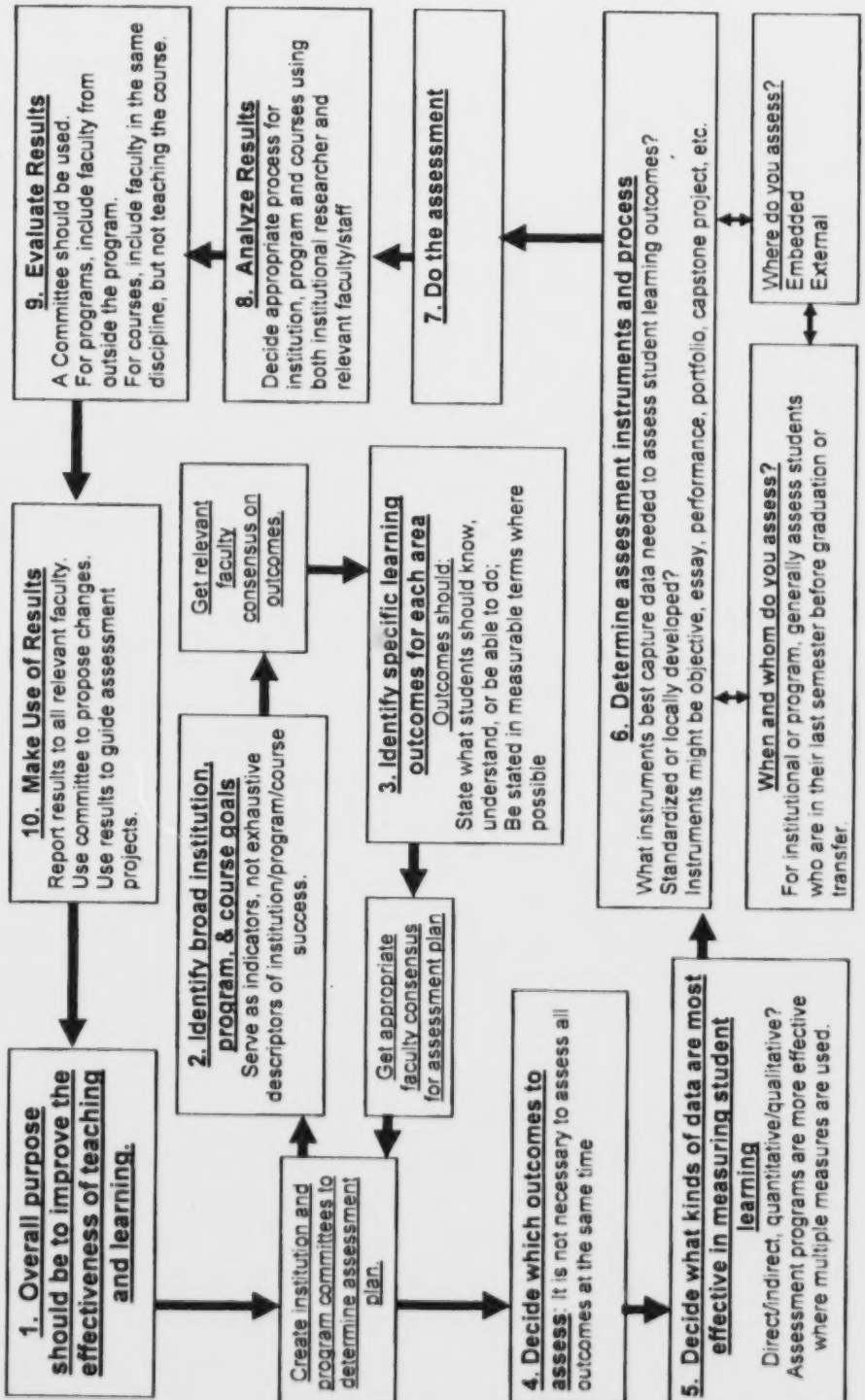
Assessment Process

While the details may differ in each area of student learning, the basic process of assessment generally consists of five key components:

1. ***Intended Student Learning Outcomes (SLO's):*** What should students know and be able to do when they complete the course, program and institution? These need to be specifically defined in terms of both content and skills.
2. ***Criteria for Success:*** What are the standards by which these SLO's will be judged?
3. ***Assessment Tools:*** What devices and methods are used to measure attainment of the SLO's? As in the other areas of learning, both direct and indirect measures should be used. For specific examples, see the section below on Assessment Tools.
4. ***Assessment Results:*** What are the assessment findings?
5. ***Use of Results:*** What changes will be made as a result of faculty reflection on the assessment findings? What areas of concern need attention to promote student learning and departmental and institutional effectiveness?

The following chart provides one model for creating an effective campus assessment process:

A Guide to Developing a Successful Assessment Process (Derived from Nelson & Hackett, COD, 2002)


1. Overall purpose should be to improve the effectiveness of teaching and learning.
Create institution and program committees to determine assessment plan.
2. Identify broad institution, program, & course goals
Serve as indicators, not exhaustive descriptors of institution/program/course success.
Get relevant faculty consensus on outcomes
Get appropriate faculty consensus for assessment plan
3. Identify specific learning outcomes for each area
Outcomes should:
State what students should know, understand, or be able to do;
Be stated in measurable terms where possible
4. Decide which outcomes to assess: it is not necessary to assess all outcomes at the same time
5. Decide what kinds of data are most effective in measuring student learning
Direct/indirect, quantitative/qualitative?
Assessment programs are more effective where multiple measures are used.
6. Determine assessment instruments and process
What instruments best capture data needed to assess student learning outcomes?
Standardized or locally developed?
Instruments might be objective, essay, performance, portfolio, capstone project, etc.
When and whom do you assess?
For institutional or program, generally assess students who are in their last semester before graduation or transfer.
Where do you assess?
Embedded
External
7. Do the assessment
8. Analyze Results
Decide appropriate process for institution, program and courses using both institutional researcher and relevant faculty/staff
9. Evaluate Results
A Committee should be used.
For programs, include faculty from outside the program.
For courses, include faculty in the same discipline, but not teaching the course.
10. Make Use of Results
Report results to all relevant faculty.
Use committee to propose changes.
Use results to guide assessment projects.

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Achieving Success in Developing Assessment

There is no one method for creating, implementing and institutionalizing an effective assessment program. Based on what other colleges have experienced, the following points seem to increase the probability of success:

1. Institutional Commitment
   The more the institution as a whole is committed, the more likely any effort, including assessment is likely to be successful – and to continue beyond changes in leadership or key personnel.

2. Leadership from the Top
   There is much said about how important it is to have ideas come from the ground up. And while grassroots involvement is usually essential (see the next point), rarely do major initiatives succeed without leadership from the President, Vice-Presidents, Academic Senate, and other key leaders. There are too many very real obstacles to a successful assessment effort without adding bureaucratic obstruction. There will be many opportunities for leadership from the top to unlock doors and to find sufficient funding. Leadership from the top provides role models, reinforcement, commitment and often additional incentives important in making changes and institutionalizing those changes. Public commitment by the Board of Trustees and periodic reports to them also improve the likelihood of success.

3. Broad-based Input
   This complements leadership from the top. It is very unlikely that a top down approach alone can be successful. Ideas can and frequently do come from a variety of sources. Creating an atmosphere of trust often leads to creative thinking and problem solving. The goal is to achieve consensus, remembering that consensus does not mean unanimity. Dialogue should be encouraged rather than advocacy of one's point of view. There must be a balance involving compromising, risk taking, solution seeking and disallowing stonewalling.

4. Communication
   Open communication involving all key constituencies is essential. Agendas should be drafted at the end of previous meetings and published well ahead of the next meeting to allow adequate input and preparation. Minutes and attendance taken and published well ahead of meetings also helps to keep appropriate records, motivate members and prepare for future discussions. Schedules and calendars discourage conflicts and decrease missed meetings.

5. Start Small and Be Practical
   Build on what is already available, including an inventory of what is currently being done on campus. Be incremental and don't try to do everything at once.

6. Patience, Perseverance, Time

Worthwhile programs frequently take time to get organized and perseverance and patience to be successful and become a part of the culture of a campus. The history of assessment demonstrates that these attributes are essential for success.

7. Data: Multiple Variables
   Very rarely does one variable or a one-time effort succeed in providing reliable or valid information. Fault can and will be found with every variable, method or instrument used in assessment. The use of multiple variables, such as viewing things from different perspectives, is crucial for analysis and reaching conclusions. Similarly, replications help to confirm (or revise) conclusions.

8. Results
   While assessment should be an ongoing process, there is also a time to examine results. This process should be seen as taking a snapshot at particular points in time. At first, semester results might predominate, then annual, and eventually periodical. One model might include reporting on different areas in different years in a cyclical approach. Trend analyses of changes over time can also be extremely helpful in demonstrating whether change has taken place and where. The importance of discussion and interpretation of the results, especially among faculty, must be emphasized.

9. Reports: Feedback
   Periodic broad reporting of results is essential for many reasons including: a sense of accomplishment by participants; a reinforcement of trust and openness to the campus community; availability of useful information for planning and decision-making; revisions, changes and improvements where needed; and fulfilling needs to demonstrate learning and student success.

10. Development & Revisions
    Assessment is and must be an ongoing process of institutional change and improvement to achieve appropriate outcomes of student learning and student success. Assessment is NOT a giant research project. In this regard, from a classical research perspective, assessment is only formative (make improvements as you identify a need for change) and not summative (issuing a final report). Improving outcomes is paramount, ongoing and subject to change throughout.

11. Institutionalization
    An institution has a successful assessment program when the process and impact of assessment is well understood by students, faculty and staff alike. It is important to seek ongoing improvement, a culture of using the results, and a climate where assessment is viewed as essential, even fun. Assessment is part of instruction; learning includes assessment.

Course, Program and Institutional Assessment

A comprehensive assessment of SLO's should be developed at the course, program and institutional level. Each level provides some perspective of successful achievement of

outcomes in the principal areas of learning described below. The institution must decide how best to accomplish its outcome goals.

Some institutions have found that assessment efforts are easier to implement at the course level, especially where there is a tradition of defining course objectives in a measurable way that includes SLO's. Many faculty are comfortable initiating the assessment process by measuring outcomes in the courses they teach.

On the other hand, Nichols (2002) pointed out that most institutions that have begun with assessment at the course level tended to get bogged down in minutiae. Further, when faculty begin at the course level, there often appears to be greater difficulty in making the transition to the broader concepts/perspective needed for general education, program and institutional assessment.

Each institution must decide where to start assessment according to its own unique qualities, history and environment. Beginning at the program or institutional level encourages review of broader issues beyond the individual classroom. The broad view permits development of the larger picture and definition of expected SLO's across disciplines. From the larger perspective, the curriculum can be reviewed and revised as needed. The specific courses and their outcomes need to be integrated into the revised curriculum.

Assessment Tools

An important step in assessing SLO's is to select the methods and/or tools to be used. Tests, standardized or locally developed, are sometimes the easiest to choose for this aspect, but they are not the only methods of assessment.

1. <u>Using Tests in Assessment</u>

Tests are the most common means used in education to assess student learning. They come in many forms: standardized and home grown, objective (e.g., multiple choice, true/false, fill-ins) and non-objective (e.g., essay, performance). For the record, standardized tests are NOT all multiple choice tests but can be performance-based such as an essay, a speech, or even a series of tasks requiring the student to respond to a variety of stimuli with a variety of responses.

Almost all instructors use tests in helping to determine student learning and achievement. To a greater or lesser degree, tests play important roles in awarding grades, traditionally the most common means of characterizing student learning. Most of these tests are home grown, developed by individual faculty members based on their judgments of the course syllabus, what has been taught and what is expected to be learned. Most faculty consider development of such course tests to be their unique prerogative, akin to academic freedom. Most faculty also consider the process of test development relatively easy to implement.

In contrast to popular lore, developing reliable and valid tests that meet high standards, including avoidance of bias, is a complex process. It includes careful conceptual/domain development; the expertise of writing appropriate, unambiguous questions/items; the testing of these items for reliability and validity across different populations; the necessary revisions; and the setting of standards (norm-referenced or criterion-referenced) that makes a test "standardized". Very, very few faculty have the time or have the psychometric expertise to write, review, revise and determine the effectiveness of their tests. An example of such difficulty can generally be observed in producing a home grown survey. In many ways, development of a survey and a test has some common characteristics – and difficulties. Many educators have developed a survey. It begins with conceptual thinking of at least both the domain and the population that is to be surveyed. Questions are written, reviewed, and revised before administering the survey. Too often in this process, we are disappointed about the "misunderstandings" that some people have with some of our best efforts. How could they have answered that question in that way! How could they have misinterpreted what had been so carefully written? A well-constructed, valid survey is not easy to produce; a valid test is generally even more difficult.

It is beyond the scope of this Handbook to adequately discuss psychometrics or test development. It is fair to state that tests are widely used and widely misunderstood. There are advantages and disadvantages in both home grown tests and standardized tests and these factors should be considered carefully in developing an effective assessment effort. Nichols (1998) describes the **advantages** of using **home grown tests** including:

a. They are more readily accepted by faculty;

b. There is greater likelihood of faculty using the results, at least initially;

c. They are often easier to design a fit for local curriculum/program.

The **disadvantages** include:

a. Time and effort of faculty to construct a reliable, valid and unbiased test;

b. Lack of external credibility;

c. Lack of opportunity to make comparisons of student performance outside the institution.

The advantages and disadvantages of using **standardized tests** include:

Advantages:

a. They are more likely to be both reliable and valid;

b. They provide comprehensive coverage of the subject area/domain to be assessed;

c. The ready availability of such instruments saves much time and effort;

d. They allow for comparability of student performance outside the institution;

e. There is greater acceptance of results by those outside the institution.

Disadvantages:

a. There is frequent hostility of faculty to standardized tests;

b. The reluctance of faculty to use the results;

c. The possible disparity between test and curriculum.

An additional factor to consider is cost, although this may be initially deceiving. Obviously, the use of a standardized test requires a purchase from a publisher necessitating a budget that must be planned for and is relatively easy to eliminate in times of financial difficulties. In using a home grown instrument, the cost of faculty time in development can be extensive and can lead to a greater emphasis and effort on test development than on analyzing and using the results to improve learning. The focus (some would say excessive emphasis) on evaluating placement tests at the local level, as is currently required of California community colleges, provides a very real example of consuming time and effort on test development at the cost of improving what is learned by students in basic skills/matriculation efforts.

Licensure, Certification and Professional Examinations are standardized tests that are sometimes available, especially in the health sciences, and can be used as an assessment device for student learning. These kinds of tests are most useful for the program major and not for general education. **Appendix C** includes a brief description and references for the leading standardized tests that are being used by colleges across the country to assess general education.

In addition, a number of other devices and methods besides standardized tests are being used by a variety of institutions to assess student learning in basic skills, general education and program/major. These methods include:

2. Departmental Exams

These were common years ago at many colleges and universities and appear to be having a revival. They are devised as common exams by a department faculty based on a consensus of concepts that are in the syllabus of one or more courses and are expected to be taught, and thus learned, regardless of which section a student enrolls in. They seem especially useful for those courses that are either requirements for many, if not all, students or have heavy enrollments of students. The advantages of such departmental exams include a consensus of both concepts that must be covered by the faculty and standards that must be met by the students. A disadvantage arises when not all faculty cover all domain aspects in a particular section or don't cover them well causing students' performance to suffer. This latter issue has been addressed in some locations by having the instructor grade the departmental exam for his/her students as part of the grading process for those students in that particular section, while a departmental group may score the exams a second time for

assessment purposes. This separates, to some extent, the grading process from the assessment process as advocated by some. It also addresses the concern about motivating students to take the assessment seriously and perform their best.

Using a sampling procedure can simplify this process. For instance, a random sample of students could be selected, or only some parts of the departmental exam could be selected for rescoring. Either option could provide adequate data for assessing student competencies/learning in a program or institution, without impacting the grades of individual students. (See also course-embedded assessment below.)

Warning: In setting standards, take care not to set them at an unrealistically high level based more on expectations (hope?) than on reality.

3. Course–embedded Assessment

As the name implies, this is a process of carrying out assessment within the normal class or course. There are at least three kinds of assessment that can be implemented within the current course structure of teaching, learning, grading and assessment/evaluation: classroom assessment, course assessment and course-embedded assessment. All three of these assessment activities must include very strong faculty initiation and involvement. Not all of these are formal structures that must be documented or provided to external sources. **Classroom assessment**, (for example, Angelo and Cross" Classroom Assessment Techniques or CAT's) as was described earlier in this Handbook, is a series of techniques and methodologies which any instructor could employ to assess how well a course is going, help determine how well students are understanding the concepts being covered, identify areas that might need reinforcement, etc. In this sense, Classroom Assessment can be a very helpful device for providing ongoing information about how a course is progressing, but it is not sufficient for assessing how well students have learned or can demonstrate proficiency.

In addition, of course, more formal (and traditional) procedures such as quizzes and tests provide feedback on how well students are learning, the results of which can provide feedback to the instructor on what, if any, mid-course corrections might be needed, concepts reinforced, methods altered to improve student learning. Information from quizzes, tests and classroom assessment activities should be used to provide feedback to the students in the course as well, including having a chance to discuss the test results wherever appropriate. This feedback can also help students considerably in their learning by encouraging them to focus on areas needing improvement and reinforcing the important concepts of the course. These are some of the activities that should happen in every course, virtually regardless of an assessment effort beyond individual courses. In this regard, testing and assessment can directly improve student learning, not merely evaluate the success of achieving outcomes.

Course assessment/evaluation is also a well-respected and traditional method in all levels of education and includes setting course goals and objectives, adding expected SLO'S (all included in the course syllabus), and then evaluating whether these outcomes were met, how well, and by how many. Adding the outcomes to the course syllabus includes defining the expectations of what the students are expected to learn or perform by the end of the course, and then assessing how well the students have achieved the competencies or skills

expected. This kind of course assessment strengthens the grading process by increasing the delineation of outcomes and standards expected and used to evaluate student performance, regardless of instructor. Classroom-based Assessment (Walvoord, et al, 1998, etc.) provides a specific model that ties into both traditional course evaluation techniques and adds a strong SLO assessment component/model.

Course-embedded assessment is the use of a course and/or the classroom to implement program and institutional assessment activities, such as assessment in general education or the major that extends beyond the individual course. This is a method of sampling that allows broad assessment activities to be carried out within the course structure instead of, or in addition to, creating a separate assessment process, such as an Assessment Day. For example, a number of questions that can be objective, short answer, or essay can be added (embedded) to the regular course final exam. These additional questions are then scored and used for program and institutional assessment. (Because each student may receive different questions, this method does not permit individual student assessment but these additional questions do not interfere with the normal grading system for the course.)

Course-embedded assessment offers a simple way to implement assessment activities for general education, program/major or basic skills with greater likelihood of both faculty and student involvement. Because the assessment activities are "embedded" within the course content, syllabus and assessment/grading practices, not separated from it, this method also helps students to be motivated to perform to the best of their abilities. Course-embedded assessment should be a meaningful part of the course, realistically applied and used in the course. The embedding of course objectives should also take place in homework, assignments and similar projects to facilitate learning and provide practice for the course-ending assessment tasks.

The results can be documented both by the instructor for the students in that course as well as for the larger picture across the institution, program or multiple courses. Course-embedded assessment involves external collaborators (e.g., other faculty members, employers, etc.) who are involved, with the course instructor, in assessing a broader context of student learning beyond the individual course level.

A compilation of several other course embedded assessment methods was developed at Kirkland College including:

Ill-defined or Ill-structured problems. An ill-defined problem is one that is not highly structured and cannot be resolved with a high degree of certainty. Experts may disagree about the best solution. Examples: determining what really happened at Waco or solving the nuclear waste storage problem or predicting the effect of global warming or deciding if there is such a thing as global warming. Dealing with ill-defined problems requires the integration of many skills, abilities, and areas of knowledge.

Critical Incidents. Students can be asked to describe an incident, either real or imagined, that illustrates or illuminates key concepts or principles. An explanation of the concepts or principles illustrated should accompany the description of the incident.

Writing Samples. Writing assignments can be used as a measure of students' mastery of course content and attainment of program or major goals. Such assignments may also be used as a measure of the general education communication skills goal as well as an assessment of critical thinking skills. Examples of writing samples include essays, research or term papers, answers to essay questions on tests, book reports, summaries, lab reports, and the like. Writing samples can be graded holistically using a rubric. (See Appendix D for examples of scoring rubrics.)

Oral Presentations/ Oral Exams. Depending on the nature and content of the course, oral presentations can be tailored not only to assess students' mastery of course content but also their attainment of general education goals such as critical thinking, general knowledge and historical consciousness, understanding the impact of science and technology, and educational and social values. Oral presentations based on course content can be used as a direct measure of students' communication skills.

4. Capstone Experience/Course

A Capstone Experience is a course, internship/fieldwork, or project that provides an opportunity for students to demonstrate their ability to synthesize what they have learned from a variety of courses. It is the culmination of a program or a degree to demonstrate readiness to work in the field and/or to continue on to higher levels of education. Examples are more common with majors or vocational programs: creating a project model in architecture; writing a computer program or debugging a computer problem; performing a recital or putting on an exhibit; identifying possible causes of a problem and fixing it (e.g., an auto, an air conditioner, a motor) and so on. In general education, a capstone experience is usually a course or experience where students are required to draw from the knowledge they have gained from a variety of experiences and courses, organize and synthesize the knowledge and skills developed, take and defend positions, both orally and in writing, and perhaps prepare a report that includes data to support recommendations. The development and assessment of a capstone experience is usually a joint effort of the faculty in a program or, in the case of general education, a cross-section of faculty from a variety of disciplines. The capstone experience, including the structure and content, needs to be clearly linked to the purposes and objectives of the program or institution, including general education, and what the students need to have learned in order to graduate from the program or institution.

5. Performance Assessment

Performance assessment is an assessment method that requires students to perform a task rather than take a test. Performance assessment is designed to judge students' abilities to use specific knowledge and skills and actively demonstrate what they know rather than recognize or recall answers to questions. Performance assessment is sometimes called **authentic assessment** because it involves tasks in an *authentic* or real-life context or a context that simulates a real-life context. (See Wiggins, 1998) Examples of performance assessment in General Education include an analysis of videotape recordings of speeches, analysis of written prose, essays, term or research papers, responses to case studies, or formal presentations.

In some courses, opportunities can be found to ask students to engage in a simulation of a real-life problem that they must solve using the knowledge and skills they have gained in the course. A single project can be structured to assess both mastery of course content and attainment of program or major goals as well as certain general education goals such as communication skills, life-long learning skills, critical thinking skills, and social and education values. For example, students might be asked to assume the role of a city council member who must make a decision concerning a controversial issue. Students might then be asked to research both sides of the issue and to deliver a persuasive speech or to write an action plan.

Another example of performance or authentic assessment is the use of a **case study**. Students are presented with a realistic example of an application in the field and must respond with an analysis that demonstrates mastery of course content and ability to apply the information and skills learned. A case study is an examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a social group. The end product of a case study is a robust description of the phenomenon being studied that demonstrates the student's understanding of the phenomenon through the application of the knowledge and skills they have learned.

6. Portfolios

Portfolios are collections of samples of each student's work designed to demonstrate and assess a student's learned performance in one or more areas. These have been traditionally popular in both academic and work realms in the arts, design, architecture and similar fields where it is necessary to display talents and proficiencies. Increasingly, other areas, especially English/writing, have begun using portfolios to demonstrate both performance and growth over time in the area under review. As with other methods of assessment, relevant links need to be established between the portfolio analysis and the purposes and objectives of the domain, program or institution being assessed. When using portfolios, it is also very important, and frequently difficult, to develop assessment protocols as to how the portfolios are to be reviewed. These protocols should include what materials will be placed in the portfolio, how these materials will be assessed, by whom, with what standards and at what time intervals. It is important to determine whether the materials in the portfolio are examples of the student's best work or typical work. Was the work done in the classroom or as a result of a course or program or can any work or material developed by the student outside of the institution be included?

Portfolios should be assessed in each area using commonly agreed to, and written, procedures or rubrics similar to the kind of consensus needed for departmental exams. These rubrics must be clear and need to be shared with students prior to including their work. Electronic portfolios (e-portfolios) are a relatively new phenomenon beginning to be used by a number of institutions.

7. Surveys for Affective Learning (Attitudinal Development)

Surveys are probably the most common type of measure used by institutions to measure the attitudinal development of their students. Although surveys are not sufficient

evidence of cognitive learning, they can provide useful information in determining change and growth in what students have gained in the affective domain. Examples of surveys include: Student Satisfaction/Attitude Surveys, Alumni Surveys, and Employer Surveys. Perceptions of student learning can be helpful in making programmatic changes but should not be used as the sole or principal basis for assessing student learning. Focus groups provide an alternative and/or supplement to surveys and could be employed in a similar manner in assessment.

Logistical Considerations in Assessment of SLO's

There are a number of issues and options that colleges have in carrying out an effective assessment of SLO's.

1. Assess the entire population or a sample: Colleges have a number of choices in whether to assess an entire population or some sub-set:

a. If students are required to demonstrate competency in order to achieve program completion, certificate or degree, then, obviously, every student will need to be assessed in those areas. For example, if a college requires demonstration of writing competency for graduation, all students seeking a degree would need to be assessed in writing.

b. Alternatively, the college might have a policy that successful completion of a required course or courses in, for example, college composition might be the standard set for demonstrating competency in writing. In developing an effective assessment system, this college might choose a sample of students selected randomly from those who had achieved the set standard (e.g., a "C" or better in the selected course(s)). This sample of students would then be directly assessed in writing to determine whether the successful completion of a particular required course was sufficient to ensure that students had achieved the writing competency at the time or just prior to graduation.

In this sampling procedure, the emphasis is not on demonstrating that each student had achieved competency, but rather that the institution's standards were appropriately set, and produced students who could actually demonstrate writing competency regardless of which section of the course the student had enrolled in. In assessing either the whole population, or in sampling a subset of that population, the college could, and should, use the results, as needed, to make appropriate changes in the program to improve student competency. In using sampling procedures, special care must also be taken in to assure student motivation. (See below.)

These examples for writing can be extrapolated to other areas of competency required for graduation.

Another alternative in assessment is for a college to choose to assess different students for competency in different domains. Either the full population or a sample could be used, but, of course, this procedure would be for assessing the institution (or program) and not the individual students. For example, let's assume the institution wants to assess how well its students are able to demonstrate their competency in such areas as writing,

quantitative reasoning, critical thinking and several areas of content in general education (social sciences, humanities, etc.). The college could use a sampling procedure that allows different students to take only certain aspects of a total assessment effort. This could be done in a variety of ways including some students being assessed in one or more areas while others are assessed in different areas. More likely, each student would be assessed in a format of random selection of areas assessed. It would be analogous to a large test where different students were randomly selected to take each part. Again, the results could be used to appropriately identify areas needing improvement that, in turn, could help identify methods, etc. that would lead to improvements in student learning.

Sampling methods allow for an assessment of a broad spectrum of areas at considerably less cost than assessing everyone on the full range of possible domains. The trade off, of course, is that sampling precludes using the assessment results for assessing individual students in those domains sampled. It is also possible to combine different sampling techniques such as assessing everyone for competency in one or more areas and also assessing different domains randomly across students as described.

2. Choose the time for assessment activities. In general, the assessment should take place at the end or near the end of a student's completion, whether it is a course, program or the institution itself. However, when assessment is carried out on a course basis only, there is the likelihood that students will be able to treat the curriculum as isolated entities, falsely concluding that when a course is completed, they can, in effect, turn off a portion of their brain and "never have to deal with that stuff again!" Such an attitude is antithetical to the purpose of providing a general education curriculum.

If assessment of SLO's is to demonstrate that students who complete the curriculum can effectively relate and communicate with a broad diversity of people and can think, synthesize and solve problems in a variety of modes pulling from an assortment of skills and content, it may be necessary to set the time for assessing a particular skill well after it is actually taught in a primary course. For instance, a student may learn the techniques of writing strong research papers in English, but the assessment of that skill might take place a semester or longer later, possibly through a portfolio assessment or as part of a broader assessment effort that includes a spectrum of skills and content. This method provides somewhat greater assurance that what is sometimes called "deeper learning" has taken place. The same comments would hold for assessment in general education, program/major or basic skills.

A number of institutions (Appalachian State University in North Carolina, for example) have set aside an Assessment Day for students to be assessed. Each student is assessed in some area, randomly selected across a variety of domains and assessment tools including surveys. This method of assessment is seen as a part of the culture of the institution: assessment is an important, integral part of the education provided as is the college's intent to use the results to improve student learning.

The type of assessment program developed by each college reflects the philosophy of that institution.

3. Address student motivation. This can be a crucial aspect of an assessment effort and MUST be carefully considered and addressed. If students do not take an assessment effort seriously, the results can be meaningless or worse, provide misdirection. An example of a well-used assessment of student learning occurs when nursing students take their Nursing Board examinations. To fail means more than discouragement; failure means inability to be licensed. Too many students failing this exam also reflect, to a large degree, on the program and institution where they received their education and their training. There is little doubt as to the motivation of the students (and the faculty) for successful achievement on this exam. The message is clear: the greater the meaning of the results, the greater the motivation to achieve success and to want to demonstrate competency. On the other hand, too much pressure can lead to anxiety, and a likely decrease in performance. Embedding assessment within the normal course structure seems to be a very effective method of ensuring appropriate student motivation for many areas and aspects of assessment. Embedded assessment methods also seem to be the least likely to disrupt the learning process – indeed, it should enhance it.

4. Communicate positive institutional messages. In examining successful assessment efforts across the country, an important component seems to be the messages that institutions give to students, directly and more subtlety. When the institution and its members, with active participation and leadership by the faculty, including the Academic Senate, and strongly assisted and supported by the college's President, backed by the Board, view assessment as an essential component of student learning and instruction, of student success, than the college including the students are much more likely to cooperate and to buy into the program. This seems to be especially the case when assessment is seen as being a normal aspect of what the college does. The more institutionalized, the more assessment is an integral part of the culture, mores, climate of the teaching/learning process, and the more accepted it is by students, the more beneficial it is to all well-established assessment effort is integral to a learning-centered college because assessment enhances, improves and demonstrates learning.

5. Use and distribute results. Part of acceptance and institutionalization of assessment efforts is directly involved with how the results are used. The results should be used to improve student learning including assisting in making appropriate curricular and pedagogical changes. **An assessment program that does not focus on and achieve improvements in student learning is worthless.** In this regard, the use of assessment results should be carefully considered by the faculty. It is also important to communicate that improvement came about as a result of planning for and implementing assessment.

The use and reporting of results must be as carefully planned as the initial development of an effective assessment effort. Issues of what should be reported, to whom, by whom, how often, etc, should be weighed and evaluated. In general, students who are assessed are owed the right of feedback on their performance. This is especially true when results are used to assess individual skills and competencies. When sampling procedures are used, the minimal report to those who participated would include a summary of the results. When sampling is used, care must be taken when providing results on an individual basis to ensure that the feedback is accurate and representative of the individual student.

The results should also be made available to those who participated in the assessment efforts and to others who could benefit from them. In this regard, assessment should become an integral component of program and institutional planning, budgeting, and staff development activities. Assessment, as well as accreditation, should be seen as an ongoing effort for improvement and learning.

The results of an assessment effort, including the various aspects included in this Handbook, should NOT be used to evaluate faculty or other personnel. Anderson (2002), however, describes the use of a Teaching Portfolio which can be used in conjunction with faculty development. The Teaching Portfolio is a common set of materials and work samples that include a selective portrayal of a teacher's work, not an accumulation. It indicates self-reflection and improvement, provides authentic evidence of teaching effectiveness and student learning and indicates the pedagogical reasoning or thinking behind one's teaching performance. Anderson divided the Teaching Portfolio into six parts:

1. Teaching responsibilities
2. Reflective statement of teaching philosophy/goals
3. Representative instructional materials
4. Evidence of student learning
5. Recent evaluations
6. Description of activities to improve teaching.

Principal Areas of Assessing Student Learning

This **Handbook** addresses four principal student learning areas for carrying out student learning assessment activities: General Education, Program/Majors, Basic Skills and Student Services/Student Support Services. A fifth section addresses issues of Access and Equity.

I. GENERAL EDUCATION

Student learning in General Education is arguably the most difficult to assess. The difficulty begins with defining what is meant by "general education". Across the U.S., every college defines this differently, but what makes the definition especially difficult is that there is often little agreement on an individual campus as to what constitutes General Education. While students are frequently expected, or even required, to take courses within designated categories of courses (e.g., communications, written or oral, math and sciences, arts and humanities, social sciences), there is less agreement across an institution as to which courses count or fall into which categories.

Different philosophies and definitions, as well as politics add to this confusion. For example, inclusion of courses among General Education categories has a powerful impact on enrollments, i.e., money and power. At some colleges, it is difficult to find a course that isn't included on some General Education list. Moreover, even when consensus is locally reached, analysis of student transcripts often demonstrates that students regularly follow paths different from what the faculty perceives as their definition of General Education. (Ratcliff, 1993) Research has shown that, in contrast to the widely held belief that General Education should help lead to a well-rounded, generally educated person, students have strong tendencies to take courses that strengthen their strengths and avoid their weaknesses. (Gaff, 1991)

Before addressing the "what" of General Education, assessment in this area of learning, to be effective, must be carried out at the program level and, more likely, at the institution level. Assessment of General Education only at the course level fails to adequately address the development of learning across courses. A critical goal of General Education must be a broad synthesis of learning that goes beyond individual courses. In addition, assessment at the program and institution level permits greater consideration of the "whole person," treats General Education comprehensively, and addresses the requirements of accreditation to move beyond the individual section and instructor level.

Assessment of General Education requires cooperative work across department and division boundaries. While this may increase difficulties in reaching consensus on definitions and development or selection of assessment strategies and instruments, it also offers the potential for creating an integrated educational program based on learning. The creation of General Education outcomes, based on what students can do upon completing the curriculum, rather than the activities contained within individual courses or academic departments, is not easily achieved. However, most faculty who have gone through this process, have found it to be enlightening, intriguing, stimulating and even exciting.

What Should be Assessed in General Education?

The answer to this question leads to two main paths: content and skills with behavior as a third possible area. For clarity, we will deal with each of the two main paths separately, but keep in mind that they are NOT mutually exclusive.

a. Content

One solution for two year colleges in defining the "what" or content of General Education is to examine the requirements or guidelines provided by universities for their baccalaureate degrees. For California community colleges, the guidelines provided by the University of California (IGETC) or those of the California State University system provide a model. Faculty may select either the principal areas such as communications, math, science, arts and humanities, social sciences, or the underlying concepts expected to be learned by all students in each of these main components. The assessment, then, would be conducted in each of these principal component areas, although it need not be done all at once, or even with all areas for all students.

The faculty at each institution determines the SLO's to be assessed depending on agreed upon definitions. For example, in determining a reasonable assessment of a General Education science component, faculty at one institution could decide that, for all students to achieve a degree, they need to know certain scientific principles. This determination could be reached regardless of specific science courses listed as options for students to complete the General Education requirements for science (both physical sciences and biological or life sciences) or which courses they actually completed within the approved options given. Once this science component is defined, the curriculum in all of the option courses could be reviewed to ensure that the identified scientific principles were taught in all the courses listed by the college as available to meet the science General Education requirements. Assessment would then be made of how well students had learned these principles. This is also a good example of how the assessment follows the conceptualization of expectations, the definition of SLO's, rather than the other way around.

At another institution, instead of agreeing to a common set of scientific principles that all students must learn, faculty might agree to allow different scientific principles or content to satisfy the graduation or program requirements. Students could then be assessed on different scientific principles based on their major or program or, potentially, the courses in which they are enrolled.

These alternative processes could be repeated in the other areas of General Education, but need not follow exactly the same path. In other words, there may be consensus on general principles in some areas (sciences, for example), but not necessarily in other areas such as arts and humanities.

b. Skills

The second area of assessing General Education focuses on **skills**, such as critical thinking, writing, speaking and listening, problem solving, quantitative reasoning or analysis and information competency. Since these General Education skills, sometimes referred to as "general intellectual skills," are also taught and reinforced as part of the major, it is more likely that agreement on the need to assess them would be reached. There may also be consensus that students should develop these skills regardless of the program or courses selected. In California community colleges, for example, all college courses are expected to include development of critical thinking in their syllabi. Similarly, many colleges require competency in writing and mathematics for achieving a degree, with "information competency" likely to be added in the future. These skills offer opportunity for at least institutional agreement on definitions.

Assessment of General Education

In creating an effective assessment effort in General Education, it is suggested that the faculty begin with a discussion of content versus skills as briefly outlined above. One institution might decide to begin with the skills of General Education, especially since writing and some form and level of mathematics (or quantitative reasoning) are generally required for a degree, certificate and/or program completion. Likewise, critical thinking and information competency or literacy (library and computer technology) are also expected

competencies across institutions. A second institution might start with the General Education content required for a degree while a third might want to include some of both either at the beginning of assessment or as the effort develops. The subsequent areas of General Education, whether determined as skills or content, are called domains. Domains include the specific principles that students must learn and competencies that students must demonstrate. Appendix B provides an example of a definition of General Education developed by the Hawaii community college system.

Regardless of how an institution defines General Education, a phase-in of assessment activities in this and other areas over time is likely to be more successful. Also, more likely to be successful is a cyclical approach to assessment, where parts of a total effort are carried out each year, making the assessment (and learning improvement) seamless and continuous.

II. PROGRAM/ MAJOR

Assessment in the Program and Major at two year colleges follows many of the same concepts and processes as assessment in General Education, although often considered to be somewhat easier to implement. This appears to be especially true for many vocational programs like nursing that have a rich tradition in program review. Such a program has more narrowly defined goals, objectives and outcomes, and often such outcomes-oriented assessment tools as a test for certification or licensing, a capstone course or experience, or similar method for assessing student learning as students exit the program.

In developing an assessment effort with a Program or Major, the institution should begin by building on what is already available. The use of an effective **program review process** is very helpful and can serve as the platform for outcomes assessment. In this regard, the content and processes of program review can be combined with the type of processes used to assess student learning in General Education. Typical areas that an effective Program review would include are:

- Industry trends
- Program demand (community needs assessment)
- Profile of both beginning and completing students (e.g., demographics, entering Basic Skills)
- Student satisfaction
- Student retention, completion and graduation
- Graduate employment
- Faculty assessment of the program
- Employer satisfaction
- Advisory committee feedback
- Program efficiency (e.g., FTES/FTE or the number of full-time equivalent students divided by the number of full-time equivalent faculty)
- External evaluator comments and recommendations

****To this list would be added: Student Learning Outcomes.**

In developing an effective assessment of Programs and Majors, the college might explore taking advantage of successful models already existing at the college. Many vocational programs, especially nursing, assess their outcomes and offer a good place to start. This can take the form of a modeling system, where the faculty from a particular area which has already developed, or can easily develop, a strong assessment system, offers a model of what is expected, included and implemented. This model will also include results and how they have been used. Then, the model is positively critiqued, improved by others and used to create similar models for other programs, tailored to the particular aspects of each program and major. The faculty from successful areas can be mentors for their colleagues in other areas as the college develops an institution-wide system. In this way, the college can develop an effective assessment program across all Programs and Majors with a phasing-in and cyclical process commonly employed with program review.

Examples of Program Outcomes in several Majors are included in Appendix E. Examples of Program review processes that include outcomes assessment of student learning are presented in Appendix F.

III. BASIC SKILLS

One of the hallmarks of a comprehensive community college is the "open door policy" which translates into opportunity, often multiple opportunities, for a higher education for all adults who can benefit from such an education. "Who can benefit" is very broadly defined. With rare exceptions, people who are 18 or older, with or without a high school degree, are allowed to enroll at a community college. With such a wide range of backgrounds, experiences, skills, abilities and motivation, determining who can benefit from enrollment is difficult.

Most community colleges choose to assess individual students at entry and use the results to place students in appropriate beginning courses. If the students succeed in achieving passing grades in their courses, they can continue toward their goal - whatever that is (e.g., skill improvement, certificate/degree, or transfer to a university). In practical terms, the ability to benefit from higher education (the open door policy) is typically determined by the student achieving satisfactory performance in courses.

The open door policy permits access to higher education. Access without quality is empty at best and counterproductive at worst, by falsely raising expectations for a college education, only to be awarded a certificate or degree that is meaningless. Assessing the quality of education provided must be as important as focusing on access. At least equally important to the quality of what is offered, is the success of students in learning and achieving competency. This is the heart of student learning outcomes or SLO's.

Many students who come through the open door have basic skills of reading, writing and mathematics below, and often well below, the skills needed to handle college level courses. Given the underpreparedness of many entering students, an open door college (most two year, almost all community colleges and many four year institutions) must

address the skills of these entering students. Failure to do so will likely preclude achieving appropriate SLO's in other areas such as general education and a major.

Developmental education (sometimes referred to as basic skills or remedial programs) is a term used to describe a variety of services and courses designed to address the underprparedness of many entering students. (In California community colleges, the term "matriculation" is used to describe student services and processes, generally non-instructional, provided to assist entering students to successfully begin their college education.) A comprehensive developmental education program has five key components:

1. Placement Testing - should be mandatory, with exceptions such as prior testing and/or successful completion of prior coursework and includes, at a minimum, basic skills testing designed to determine the reading, writing and mathematics skills of entering students.
2. Placement - refers to the enrollment in beginning courses on the basis of multiple variables including results of a placement test.
3. Basic Skills Instruction – usually carried out through basic skills courses in reading, writing, ESL and mathematics. Because of the diversity of student underpreparedness, multi-level remedial/basic skills courses are almost always needed especially in community colleges.
4. Support Services – include counseling/advising, a learning center, tutoring, supplemental instruction and similar programs geared to provide cognitive and affective support to students usually outside the classroom.
5. Assessment – refers to the evaluation of the effectiveness, including outcomes, of the developmental education program.

No open door college can be successful without an effective, comprehensive developmental education program. Given the low proficiency levels of many entering students in basic skills, a lack of success in developmental education will lead either to high attrition (empty access) or a lowering of standards (poor quality). Developmental education bridges the gap between the low skills levels of many entering students and the skills needed for success in college level courses. Thus, for open door institutions, assessment in developmental education is crucial.

Basic Skills Instruction

Instruction is the heart of developmental education and it is the heart of basic skills assessment. There are two main methods for assessing basic skills: direct assessment and indirect assessment. For writing, direct assessment includes having students demonstrate their level of competency or proficiency by writing; for math, it means having students solve problems and demonstrate that they understand the basic skills of mathematics. In general, reading is usually assessed by a reading test, but could also be assessed by oral readings or effective demonstration of understanding reading through writing about the material. While this latter method would make it difficult to separate reading from writing competency, most faculty would probably care less about such differentiation and be more concerned about whether a student could, in fact, demonstrate competency in both reading and writing. (The direct assessment of SLO's in Basic Skills can differ little in process from similar

assessment in General Education although the content of the writing and math skills is usually at a higher level in general education.)

Assessment of Basic Skills, both direct and indirect, should be implemented within each discipline separately: reading, writing, English as a Second Language (ESL), and mathematics. For the purposes of this Handbook, assessment in ESL courses and programs should be considered analogous to the process for reading and writing.

Direct Assessment of Basic Skills Assessment

The crucial point of assessment of Basic Skills is to determine how well students have learned, that is, how proficient each student has become in writing, reading and mathematics. Key aspects include:

1. Define the reading, writing and math proficiencies expected to enter the college level English course (e.g., English 1A) and the lowest (first) college level math course. These entering college level proficiencies are, or should be, the outcomes of the highest level Basic Skills courses (as well as the prerequisites for these same college courses). At a minimum, a college should assess the SLO's of the highest level remedial courses offered at the college.

2. Many colleges may choose to go beyond the outcomes of the highest level remedial courses and assess the skills of students as they complete lower levels of remedial courses. In this situation, the college should define the proficiencies (i.e., prerequisites) needed to enter each level of remedial course for each Basic Skills area. These proficiencies then become the outcomes of the lower level remedial course. (The lowest level course has no entering proficiencies or prerequisite which lead to certain difficulties discussed below.)

3. Select the method used to assess proficiency in each Basic Skills area. Generally, this is a test, standardized or locally developed. Assessment in reading should generally be a standardized test due to the extraordinary difficulty of creating a locally developed reading test that is reliable and valid. Assessment in math (probably arithmetic and algebra) should focus on problem solving and be either locally developed or standardized. In writing, the most accurate measure of assessment includes both essay(s) and multiple choice questions, again either standardized or locally developed. (Essays can be standardized as well, as can be the scoring, such as the use of holistic scoring or, more recently, scoring using a computer program.)

4. Decide whether to assess all students or a sample (usually randomly selected). In this decision, the institution needs to consider whether it wants all students to demonstrate proficiencies or whether program assessment is the focus. (The focus in Basic Skills assessment is more likely than other areas of student learning, to be on demonstration of competency for each student, rather than using a sampling procedure due to the need for these skills in higher courses, in most work situations and in most people's lives.)

5. Finally, the location of the assessment must be decided including whether it is part of the course or a separate assessment activity. See the section below on methods and tools of assessment for a discussion of motivation in assessment and the use of embedded assessment techniques.

Pre- and Post-Testing: While a pre-test is not essential in assessment, a pre-test/post-test design is more valuable in providing information about student learning, including value-added. Assessment (usually a test) is administered either at the beginning of the course or before the course begins; then an alternate form of the test is administered at the end of the course. The placement test can serve as a valid pre-test with an alternate form of the placement test used as the post-test. The simplest method is to compare the pre-test results to the post-test results with the traditional goal being to achieve a statistically significant increase from the pre- to the post-test. Of course, the comparison of results is only made with those students who complete both the pre- and the post-test.

Finding positive results with this method is usually relatively easy to achieve for several reasons. First, the weakest students tend to drop out of the course and do not complete the post-test. This means the comparison more likely to be with the students who completed the course and, thus, it is expected, became more proficient. A second reason that positive results will be likely to ensue from this method is a phenomenon called "regression toward the mean". This is a statistical situation that occurs when a measurement or assessment is made of one group that is at either end of the continuum being assessed. In this case, by definition, the students in the Basic Skills courses are below average in at least one basic skill. Everything else being equal, the probability is that some of these students will increase in proficiency (move or "regress" toward the mean) simply by chance. In other words, more of these students have only one direction to go: up. Therefore, since it should be relatively easy to achieve a statistically significant increase in pre- and post-testing, failure to do so would probably indicate serious problem(s) with the course or program.

A **second**, more powerful **pre/post-test design** is to examine the percentage of students who both passed the Basic Skills course (C or better) and who achieved the standard of proficiency previously established to move to the next level of Basic Skills course or college level. With this latter method, then, standards for passing the course include demonstrating proficiency at the end of the course or program as well as achievement of a successful grade (C or higher). Using pre/post-testing in this way, the goal might be: 90% of all students achieving a "C" or better would be able to demonstrate successful proficiency on the post-test. This leaves room for up to 10% of the students who really have achieved proficiency even if they were not able to demonstrate such on the post-test due to extraneous problems such as test anxiety. <u>This pre/post-test design could be employed to assess learning, either "value-added" learning and/or competency in any course across the curriculum beyond Basic Skills.</u>

<u>Warning:</u> motivation is often a factor in post-test results, especially if students perceive that the post-test has little or no impact on their grade. Therefore, it is recommended that the post-test play an important role in the final grade, and, whenever feasible, be integrated into

the final exam process. The need to address student motivation is a crucial factor across the spectrum of assessment. See especially the section below on "course embedded" assessment and similar efforts to appropriately address student motivation issues.

Indirect Assessment of Basic Skills

While direct assessment of Basic Skills is essential to determine students' competency, it is strongly recommended that indirect assessment also be used. The combination of multiple variables produces a much more powerful assessment model (increases the probability of accuracy of results and conclusions) than any single variable, each of which, when used alone, may be flawed. Also, especially in the Basic Skills area, many variables play important roles in student learning and student success. How students perform in subsequent courses, the retention/persistence rates, and their overall grades combine to more accurately depict the success of the varied services that go into Basic Skills and remedial programs. Several indirect assessment variables should be considered (each of these could be assessed by semester or by year):

a. Course Completion. Retention in California community colleges is defined as the percentage of students who are enrolled at the time of census who achieve a grade of A, B, or C in that course. Students who receive a D, F or W should be considered not successful. I's (incompletes) are excluded from the analysis. The same comparison can be used for C (Credit) and NC (No Credit) grades. The flaw in using this variable in isolation is that it is not known under what standards grades are awarded or how much learning has actually taken place.

b. Successful Performance in Subsequent Courses. This is defined as the percentage of students who, having successfully completed the Basic Skills course or program, subsequently enroll in and achieve a passing grade of "C" or better in the next level course of basic skill or college course. This would, obviously, be English to English and math to math. For reading, if there is no comparable college level course in reading, the college might select a General Education course where reading is an important prerequisite and which is taken by a relatively large cross section of students (e.g., psychology, history, political science, etc.).

c. Persistence. This is the term used in California community colleges while the rest of the country would probably use the term "retention". This is defined as the percentage of students in the original cohort who continue to enroll at a subsequent point in time (e.g., one semester, a year, or more). Students who drop out and then return are continued in the cohort at the time the analysis or "snapshot" is done. The flaw in using this variable in isolation is to assume that students who persist have learned.

d. Grade Point Average (GPA). The use of grade point average as one of the indirect measures of student learning provides a more accurate assessment than individual course grades because it includes the grades of multiple courses. Thus, GPA is more likely to account for individual differences inherent in each course separately. A simplistic definition would include the mean GPA achieved by each student either by semester or cumulatively. The college must also decide whether to include the Basic Skills or remedial

courses in the calculation of GPA. Another variation is to examine the percentage of students who achieve a minimum GPA such as 2.0 or 2.5. It is expected that students who have gained basic skills competencies at the college level would be better able to achieve a successful GPA since basic skills are, by definition, important prerequisites for most college courses. (The word "better" here leads to the question: against what? See Appendix A for a discussion of comparison groups.)

e. Other Variables. Other possible indirect variables include credit ratio (the percent of credits or units achieved compared with the credits or units attempted), satisfaction (student and/or faculty), transfer rates and graduation rates. Satisfaction Surveys can be very helpful in seeking information from those most directly involved in instruction about perceptions, processes, communication, and so on, which frequently play important roles in achieving a successful program. Such surveys should be used in conjunction with the outcome variables described above, not replace them. Asking students how well they perceive their learning can be constructive, but is insufficient to demonstrating actual learning or competency.

Transfer Rates and Graduation Rates are important indirect outcomes of educational programs and should be included in assessing program, degree and institutional outcomes. However, because of the numerous intervening variables, including time and other courses (e.g., General Education, major), the relationship between Basic Skills efforts and transfer and graduation rates is rather tenuous. It is recommended that these latter two outcome variables be more appropriately used elsewhere in assessment than with Basic Skills.

Academic Success is an indirect assessment variable that can help assess program success. Academic success is defined as the percentage of a cohort of students who remained enrolled after one, two or more semesters and who achieved a cumulative GPA of 2.00 or higher at the time of the follow-up. This factor combines both course retention and satisfactory grades.

How to Use These Variables in Assessing the Outcomes of Basic Skills Instruction

Collecting information for assessment is relatively easy. Knowing how to interpret the data is much more difficult. Many factors enter into this process and analysis. "Success" is a complex phenomenon, neither easily defined nor understood. The emphasis of this Handbook is on developing effective practices of assessing outcomes. The multiple aspects successful learning, such as instruction, curriculum, standards, class size, time on task, student abilities and competencies, learning styles, instructional methodologies, and so on will not be thoroughly explored here. Faculty, however, must take these factors into consideration to best understand and interpret the data and use the results to improve learning.

Many factors that enter into successful learning are also present in Basic Skills instruction. Remember that students take these Basic Skills courses not always out of choice but out of need. Therefore, motivation is frequently a factor; students find themselves enrolled in courses that are not their favorite, and perhaps, have not been successful in the

past. Also, almost by definition, students' past poor academic performance in Basic Skills is related to such factors as: poor planning and time management, inadequate study skills, learning disabilities, difficulties in delay of gratification, personal, social or family issues, and so on. While students in courses across the curriculum exhibit these factors, they frequently predominate among students enrolled in Basic Skills courses. An effective program or institution must take these factors into consideration, inside and outside the classroom.

Another challenge of achieving success in Basic Skills is factoring in the diversity of skills, especially in the lowest level courses, where there is often no floor of skills. That is to say, some students could be illiterate, at least in English, in these courses. This significant diversity of students' competencies in the lowest level Basic Skills course makes a standard notion of "success" more difficult to achieve.

The diversity of Basic Skills above the lowest level course in a multi-level system of pre-college courses should be less than the lowest level course. This is because the higher level Basic Skills courses frequently have, or generally should have, established prerequisites that students must have to enter. The use of prerequisites establishes more reasonable levels of skills and competencies needed to learn the material in the course and increases the likelihood of success by both the instructor and the student.

Comparison Groups

One method of assessing outcomes is to examine whether and how well students have achieved competency, defined for a particular subject area or domain, by the faculty, at a predetermined level or standard. Another method of assessing success is to measure the growth or "value added" from the beginning of the course or program to the end. While providing important information, value added does not necessarily indicate competency, proficiency or achievement of a standard. A third method is to compare outcomes across different groups of students. This latter method is especially helpful in examining the success of one method, service or program against another. The expectation (or hypothesis) would be that those students served by the extra or special services or program would achieve better or higher outcomes, however defined. (For a more complete discussion of the use of control and comparison groups and suggested standards in Basic Skills assessment, please see Appendix A.)

IV. STUDENT SERVICES/ACADEMIC SUPPORT SERVICES

Astin (1991) of UCLA proposed a model of program evaluation that seems appropriate today in developing an assessment system for student services (counseling, financial aid, EOPS, DSPS, athletics, international education, PUENTE, TRIO, MESA, and so on) and academic support services (tutoring, learning center, supplemental instruction, etc.). Astin's I-E-O model looks at Input, Environment and Output. Input refers to what the students bring with them as they enter a program or institution: demographics, past academic achievement, basic skills proficiencies, learning styles, study skills, and various affective factors (e.g., motivation, etc.). The Environment includes the programs and services an institution provides for students including such components as: counseling,

instruction, matriculation, tutoring, mentoring, computer assisted learning, and so on. Output includes the outcomes/results of what has happened to the students who were served by the program/service/institution.

Assessment of student services/academic support services could begin with Astin's I-E-O model of evaluation as a theoretical framework and then explore combining traditional program review processes with additional focus on the outcomes of the effort(s). Some or all of the following might be used in examining the process variables traditionally included in an effective program review:

- Leadership
- Lines of authority
- Staffing
  - Number
  - Credentials
- Number of Students served
- Facilities
- Budget
- Climate
- Satisfaction
- Services offered

An effective assessment design for student services/academic support services would add measurable outcomes to these traditional program review/process variables. As is true for the other areas, there are two major directions in assessing the efforts of Student Services/Academic Support Services include:

a. Direct assessment, and

b. Indirect assessment of students served by a program or service (e.g., EOPS or counseling).

The former is difficult to accomplish, especially in a two year college. The latter follows a pattern similar to effective program evaluation, with the addition of student outcomes. Each of these are:

A. **Direct Student Learning.** This is an assessment program for student services similar in process and design to one for instructional programs.

1. Begin by defining the area of learning expected, including the definition of the learning outcomes expected in that area. Possible example areas include: self-esteem, self-confidence, leadership, etc.

2. Define which students are expected to achieve the outcomes in the area(s) selected and the criteria for success. This becomes the cohort to be assessed, and may include

students in a single course or a program or all students enrolled at the college. The cohort might then be defined by time limits, units enrolled, etc.

3. Select appropriate tools for assessment. A pre- and post-testing design might be employed to assess where the students are at the beginning of the process and where they are at the end of the process/course/service provided. Without assessing the students' beginning level on a trait, it is not possible to determine the impact of the program or services on students' learning/development of that trait. The post-test assesses whether students have achieved the level expected on the trait(s) being assessed. The post-test can also provide information on the change (or "value added") when compared to the pre-test. (A "test" is used here, especially with student services, to include a survey or other assessment tool.)

4. Analyze the results of assessment.

5. Use the results to improve a program/service and its outcomes.

Caution: all of the complexities of experimental design, and the multitude of possible impacting variables, are beyond the scope of this Handbook. However, it is suggested that in assessing impact, do not get mired in debates over "cause and effect". For example, suppose an institution wants to assess its impact on student self-esteem or leadership. Also, suppose the entering students (in a program or institution) generally score low on a pre-test of this trait. On the post-test, however, the students generally score high on this same trait. A reasonable person might conclude that the students improved or/achieved success on this trait because of what the program, service or college had done to improve student performance. Critics, on the other hand, might warn that other factors led to the changes/improvements found, such as maturation of the student or other factors or programs, on or off campus. While these critics are not wrong, educational programs/services do not permit the controlling of variables that pharmaceutical companies, for example, use to test the impact of drugs (so-called "double-blind" experiments where neither the patient nor the person who administers the drug knows whether an actual medicine or a placebo is given).

We do not and cannot control all the possible variables ("intervening variables") in education. The trap is to conclude that we cannot, therefore, make any reasonable conclusions. Not true! The use of multiple variables and the replication of studies are powerful tools to use in addressing these intervening issues. Other traditional methods such as random selection, use of control groups or, more likely, comparison groups, also can contribute significantly to addressing extraneous variables.

B. Indirect Measures. In this assessment model, a cohort of students is identified and selected and then followed over different time periods. In this method, called longitudinal cohort analysis, it is important to emphasize that these cohorts do not change. A student may drop out of the program being assessed, or even out of the college, but will still remain in the cohort. If they re-enroll in the college or program, they continue to remain in the originally defined cohort. For example, a cohort of 100 students enters a program and, one year later, 62 of them are still enrolled in the program. The persistence rate would be 62%

regardless of the number of students who dropped out during the year only to reenroll prior to the beginning of the second year, when the follow-up is made. This procedure permits taking a picture or snapshot of what is and has been happening to the cohort at various time intervals on any of a variety of variables.

An example of such a cohort would be the selection all EOPS students who began at the college during a particular semester. Let's assume that the cohort consisted of 100 new EOPS students who began in the EOPS Program in the fall of 2000. We then take a picture of what has happened to those same 100 students one, two or more semesters or years later. We might look at how many and what percent of these students are still in the program, are still in the college, achieved a degree, transferred to a university, achieved a cumulative GPA of 2.0 or higher, and so on. This would give us feedback on what has happened to these students and can be used not only to assess the impact of the program, but also to examine the impact of the program on different cohorts, as well as provide information needed to improve the program.

Please note that this kind longitudinal cohort analysis provides more valid information on the impact of a program on student outcomes and success than looking at the total student population of a program. In particular, sometimes a practice is followed where students who do not perform well in a program are replaced by new students. This practice changes the cohort and thus the assessment of the cohort/program. A change in the cohort in this way is very likely to give a distorted (and inaccurate) view of the outcomes of a program because it is not known whether the outcomes are a result of the program or the change in students (cohort).

Outcome Variables

Once the cohort is defined, the same indirect outcome variables used with other areas of learning can help assess how effective the program or service is over different time periods:

- Course completion rates
- Basic skills completion rates
- Retention rates
- Persistence rates
- GPA (semester and cumulative) (mean or percent who achieve a certain level)
- Graduation rates
- Transfer rates
- Success after transfer (GPA, Persistence, Graduation)
- Job Placement rates

- Job/Employer satisfaction

Comparisons using each of these variables can be made with each cohort and other cohorts in the same program, in different programs, or with the student population at large. These variables can also be used to make comparisons over time to see if program changes are actually demonstrating improvements in outcomes.

Direct assessment of SLO's for each area of student services could also be carried out. However, the impact of the student services program on the achievement of these SLO's may well be marginal because they have not traditionally been responsible for achieving SLO's in Basic Skills, General Education or Major.

V. ACCESS AND EQUITY

Two important aspects of program and institutional effectiveness are the extent to which a program or institution enrolls potential students and maintains a diversified student population (access) and the level of outcome achievement for various student groups (equity).

Access

Access has two components: the percentage of the community that is served by the college and the ratio of diversity in the student population as compared with the community. As a goal, a community college should serve a percentage of the community equal to at least the national or state averages. In addition, the percent of students enrolled for each of several defined groups (e.g., race/ethnicity, gender, etc.) should be reasonably comparable (within 5-10%) to the population where the college is located and community served. These comparisons can also be made over time to demonstrate changes both at the college level and in the community.

Equity

In the context of outcomes assessment, equity is defined as the extent to which an institution or program achieves a comparable level of outcomes, direct and indirect, for various groups of enrolled students. (These groups are most likely the same as defined in Access above.) In assessing equity, the methods of assessing outcomes are the same as those described in other areas of this Handbook. For example, after determining the graduation rate for all students in a particular cohort of entering students, assessing equity would mean assessing the graduation rates of various subgroups in the same cohort and seeing how these subgroups perform compared to the total cohort. This assessment process could be carried out for any cohort of students in any area of learning and for any program, degree, service or institution.

DEFINITIONS

ACCESS: has two components: the percentage of the community that is served by the college and the ratio of diversity in the student population as compared with the community.

ACCOUNTABILITY*: the public reporting of student, program or institutional data to justify decisions or policies.

ANALYTICAL SCORING:** evaluating student work across multiple **dimensions** of performance rather than from an overall impression (**holistic scoring**). In analytic scoring, individual scores for each dimension are scored and reported. For example, analytic scoring of a history essay might include scores of the following dimensions: use of prior knowledge, application of principles, use of original source material to support a point of view, and composition. An overall impression of quality may be included in analytic scoring.

ANCHOR(S) **: a sample of student work that exemplifies a specific level of performance. Raters use anchors to score student work, usually comparing the student performance to the anchor. For example, if student work was being scored on a scale of 1-5, there would typically be anchors (previously scored student work), exemplifying each point on the scale.

ASSESSMENT: the systematic collection of data and information across courses, programs and the institution with a focus on outcomes, especially student learning outcomes, but also includes process, especially in seeking ongoing improvement.

AUTHENTIC ASSESSMENT: assessment that requires students to perform a task rather than take a test in a real-life context or a context that simulates a real-life context. Designed to judge students' abilities to use specific knowledge and skills and actively demonstrate what they know rather than recognize or recall answers to questions.

BASIC SKILLS: below college-level reading, writing, ESL, and mathematics.

BENCHMARK: a sample of student work or a detailed description of a specific level of student performance that illustrates a category or score on a scoring rubric.

CAPSTONE (course or experience):

CLASSROOM ASSESSMENT TECHNIQUES (CAT's)

COHORT: a group (of students).

COMPETENCY*: a combination of skills, ability and knowledge needed to perform a specific task at a specified criterion.

COURSE ASSESSMENT: assessment of student learning outcomes at the course level

CRITERIA:** guidelines, rules, characteristics, or **dimensions** that are used to judge the quality of student performance. Criteria indicate what we value in student responses, products or performances. They may be holistic, analytic, general, or specific. **Scoring rubrics** are based on criteria and define what the criteria mean and how they are used.

CRITERION-REFERENCED ASSESSMENT:** an assessment where an individual's performance is compared to a specific learning objective or **performance standard** and not to the performance of other students. Criterion-referenced assessment tells us how well students are performing on specific goals or standards rather that just telling how their performance compares to a norm group of students nationally or locally. In criterion-referenced assessments, it is possible that none, or all, of the examinees will reach a particular goal or performance standard.

DEVELOPMENTAL EDUCATION: a term used to describe basic skills/remedial courses and support systems (e.g., placement testing and placement, counseling/advising, and such academic support services as tutoring, learning center and computer-assisted instruction or CAI). (At COD: one of the academic divisions, focusing on adult basic education, non-credit ESL and GED (high school equivalency).)

DIRECT ASSESSMENT: the measurement of actual student learning, competency or performance. Examples include essays, tests, speeches, recitals, capstone experiences and portfolios.

DOMAIN: a set of skills or subskills in a particular educational area; for example, the specific skills that make up algebra or critical thinking.

EMBEDDED ASSESSMENT: a method of sampling which allows broad assessment activities to be carried out within the course structure by "embedding" these activities within the course content, syllabus and assessment/grading practices, not separate from the course. This encourages students to be motivated and to perform to the best of their abilities.

EQUITY: the extent to which an institution or program achieves a comparable level of outcomes, direct and indirect, for various groups of enrolled students.

GENERAL EDUCATION: the content, skills and learning outcomes expected of students who achieve a college degree regardless of program or major. This includes both skills in such areas as writing, critical thinking, problem solving, quantitative reasoning, and information competency as well as content knowledge in a spectrum of learning outcomes including: communications, arts, humanities, mathematics, sciences and social sciences.

HOLISTIC SCORING: a scoring process in which a score is based on an overall rating or judgment of a finished product compared to an agreed-upon standard for that task.

ITEM:** an individual question or exercise in an assessment or evaluative instrument.

INDIRECT ASSESSMENT: the measurement of variables that assume student learning such as retention/persistence, transfer and graduation rates, and surveys.

INPUT: the demographics and skills students bring with them as they enter a course, program or institution.

INSTITUTIONAL EFFECTIVENESS: a term used by various components of the institution or the institution itself to review how effectively goals are achieved.

ITEM:** an individual question or exercise in an assessment or evaluative instrument.

LONGITUDINAL COHORT ANALYSIS: a form of evaluation or assessment where a particular group (cohort) is defined on a set of predetermined criteria and followed over time (longitudinal) on one or more variables.

MATRICULATION: in California, a process to assist entering college students to be successful, including admissions, registration, orientation, placement testing, counseling, registration and evaluation. Outside of California: registration/enrollment.

NORM-REFERENCED ASSESSMENT:** an assessment where student performance or performances are compared to a larger group. Usually the larger group or "norm group" is a national sample representing a wide and diverse cross-section of students. Students, schools, districts, and even states are compared or rank-ordered in relation to the norm group. The purpose of a norm-referenced assessment is usually to sort students and not to measure achievement towards some criterion of performance.

OPEN-RESPONSE ITEMS: items requiring short written answers.

OUTCOME: results; what is expected to be produced after certain services or processes. (See student learning outcomes below.)

OUTPUT*: anything an institution or system produces
- a value-neutral quantity measure
- usually measured in terms of volume of work accomplished
- often confused with a measure of quality of degrees, research, student services, etc.

PERSISTENCE: the ongoing enrollment of students over multiple semesters or terms.

PERFORMANCE-BASED ASSESSMENT: (also known as *Authentic Assessment*): items or tasks that require students to apply knowledge in real-world situations.

PERFORMANCE INDICATORS*: a set of measures that are used to evaluate and report performance.

PLACEMENT: the counseling/advising process, using multiple variables, usually including the results of a placement test, to assist entering college students enrolling in beginning college courses, especially remedial/basic skills courses.

PLACEMENT TESTING: the process of assessing the basic skills proficiencies or competencies of entering college students.

PORTFOLIO: a representative collection of a student's work, including some evidence that the student has evaluated the quality of his or her own work. A method of evaluating the work is important as is determining the reasons the student has chosen the work included in the portfolio.

PROGRAM ASSESSMENT: assessing the student learning outcomes or competencies of students in achieving a certificate/degree beyond basic skills and general education.

PROGRAM REVIEW: a process of systematic evaluation of multiple variables of effectiveness and assessment of student learning outcomes of an instructional or student services program.

PROMPT: a short statement or question that provides students a purpose for writing; also used in areas other than writing.

PERFORMANCE INDICATORS*: a set of measures that are used to evaluate and report performance.

RATER:** a person who evaluates or judges student performance on an assessment against specific criteria.

RATER TRAINING:** the process of educating **raters** to evaluate student work and produce dependable scores. Typically, this process uses **anchors** to acquaint raters with criteria and scoring rubrics. Open discussions between raters and the trainer help to clarify **scoring criteria** and **performance standards**, and provide opportunities for raters to practice applying the rubric to student work. Rater training often includes an assessment of rater reliability that raters must pass in order to score actual student work.

RELIABILITY:** the degree to which the results of an assessment are dependable and consistently measure particular student knowledge and/or skills. Reliability is an indication of the consistency of scores across **raters**, over time, or across different **tasks** or **items** that measure the same thing. Thus, reliability may be expressed as (a) the relationship between test items intended to measure the same skill or knowledge (item reliability), (b) the relationship between two administrations of the same test to the same student or students (test/retest reliability), or (c) the degree of agreement between two or more raters (rater reliability). An unreliable assessment cannot be valid.

RETENTION: in California community colleges, the completion of a course or semester (Course Completion outside of California). Outside of California, used in the same manner as persistence: the reenrollment of students over multiple semesters or terms.

RUBRIC: a rubric is a set of scoring guidelines for evaluating students' work. Typically a rubric will consist of a scale used to score students' work on a continuum of quality or mastery. Descriptors provide standards or criteria for judging the work and assigning it to a particular place on the continuum. Rubrics make explicit the standards by which a student's work is to be judged and the criteria on which that judgment is based. (See Appendix D for more information on rubrics including two examples and several websites.)

SCAFFOLDING: giving support in order to help the performance of a task, whereby this support is faded. This contrasts with Modeling (to present a desired behavior or process so that it can be imitated by the learner) and Coaching (support to help the performance of a task aimed at improving the performance of the learner.)

SCALE:** values given to student performance. Scales may be applied to individual items or performances, for example, *checklists*, i.e., yes or no; *numerical*, i.e., 1-6; or *descriptive*, i.e., the student presented multiple points of view to support her essay. Scaled scores occur when participants' responses to any number of items are combined and used to establish and place students on a single scale of performance.

STANDARDIZATION:** a consistent set of procedures for designing, administering, and scoring an assessment. The purpose of standardization is to assure that all students are assessed under the same conditions so that their scores have the same meaning and are not influenced by differing conditions. Standardized procedures are very important when scores will be used to compare individuals or groups.

STUDENT LEARNING OUTCOMES (SLO): the competencies and skills expected of students as they complete a course, program or institution.

STANDARD*: a predetermined criterion of a level of student performance
- a measure of competency
- set by experts representing a variety of constituents (e.g., employers/ educators/ students/ community members)
- criterion (standard) may be set within institution or externally by industry/ employers.

TASK:** an activity, exercise, or question requiring students to solve a specific problem or demonstrate knowledge of specific topics or processes.

VALIDITY:** the extent to which an assessment measures what it is supposed to measure and the extent to which inferences and actions made on the basis of test scores are appropriate and accurate. For example, if a student performs well on a reading test, how confident are we that that student is a good reader? A valid standards-based assessment is aligned with the **standards** intended to be measured, provides an accurate and reliable estimate of students' performance relative to the standard, and is fair. An assessment cannot be valid if it is not reliable.

VALUE ADDED*: a comparison of knowledge, skills, and developmental traits that students bring to the educational process with the knowledge, skills and developmental traits they demonstrate upon completion of the educational process.

*Defined by the National Postsecondary Education Cooperative. A document that further examines issues related to the measurement and use of student outcomes and the complete dictionary of over 400 terms are available on the NPEC Web site (nces.ed.gov/npec).

** Derived from the CRESST Glossary, Graduate School of Education, UCLA.

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Websites

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www.ca-assessment-inst.org The website for the California Assessment Institutes.

www.aahe.org/assessment This website from the American Association for Higher Education (AAHE) Assessment Forum provides a wide variety of excellent materials.

http://nces.ed.gov./npec/evaltests/ Developed by the NPEC (National Postsecondary Education Cooperative), provides definitions of the domains of critical thinking, problem solving and writing as well as descriptions of tests used to assess these skills

http://www2.acs.ncsu.edu/UPA/assmt/resource.htm An excellent array of internet resources for higher education outcomes assessment, NC State University, University Planning & Analysis.

http://ericae.net/testcol.htm The Test Locator at the Eric Clearinghouse on Assessment and Evaluation. Includes links to ETS database on tests and to reviews from Buros Mental Measurements Yearbooks and Test in Print. Guidelines for test selection tips are included to help in selecting appropriate instruments.

www.calpress.com Publishes several instruments related to critical thinking as well as rubrics for holistically scoring essays.

www.sonoma.edu/cthink/default.html Includes links on what critical thinking is and how to teach and assess it.

www.Colorado.edu/outcomes/resource.html Internet resources for higher education outcomes assessment, University of Colorado at Boulder.

http://www.tamu.edu/marshome/assess/oabooks.html A list of links of General Resources, Agencies, Institutes and Organizations, Assessment Instruments and Techniques, Assessment Papers and Reports, Commercial Resources on Assessment, Benchmarking, and Software.

http://www.topsy.org/learneroutcomes.html -- Links to assessment implementation, general education competencies, accreditation outcomes, and divisional competencies.

http://www.cod.edu/outcomes/index.htm#DivisionProgram College of DuPage Program

http://www.sinclair.edu/divisions/ -- Sinclair Community College Academic Divisions page -- Visit each division to view program outcomes.

http://www.ecc.edu/studentlife/student_acad.php3 -- Erie Community College Academic Programs

http://www.uncc.edu/stuaffairs/sar/ University of North Carolina at Charlotte Student Assessment Resources

http://www.mcc.commnet.edu/irp/outcomes.htm -- Manchester Community College

http://www.nv.cc.va.us/assessment/index.htm. Academic Assessment at Northern Virginia Community College

http://www.parkland.cc.il.us/aac/programs/natsci/index.htm Parkland College Academic Assessment

APPENDIX A

The Use of Control/Comparison Groups and Standards in Basic Skills Assessment

The use of control groups in assessing outcomes and effectiveness in higher education is difficult. We can't control for "placebo" or "Hawthorne" (attention/change) effects, as is done in "double-blind" experiments used in drug research, where neither the patient nor the doctor or nurse know which persons are receiving the drug or the placebo. Both the students and the teachers know whether they are involved or not with the "treatment" (basic skills or remediation).

Another difficulty in attempting to use a control group in education involves an ethical question. Is it appropriate to randomly select a group as a control, knowing that they need assistance, withhold that assistance and potentially jeopardize their college success?

Fortunately, the use of "comparison groups" can work almost as well. (A thorough analysis of control and comparison groups, evaluation designs, statistics, and the impact of various factors on findings and interpretation of results is beyond the scope of this Handbook.) In the context of basic skills and remediation, a comparison group can be found which mimics control groups in several ways and permits appropriate analysis without causing ethical concerns. The following groups of students occur "naturally" in a community college and can be used as comparison groups to those students who enroll and/or complete basic skills and remediation.

A. "No-Need" Group: these are entering students who do not need remediation in a particular Basic Skills area. This is an important comparison group. Please note, in carrying out appropriate assessment activities in Basic Skills, the definition of the group and the area of assessment should be defined by the subject area involved separately: reading, writing, and mathematics. To combine these Basic Skills areas, usually leads to confusion in interpreting the results and providing appropriate feedback as to which particular area is effective and which needs improvement. Also, to define comparison groups as "no need," "needing remediation in one area," "needing remediation in two areas" and "needing remediation in three areas" will most likely produce very predictable results: the more remediation needed by a student, the more likely performance will not be successful. This then, becomes an evaluation of the effect of multiple levels of remediation on student outcomes rather than as assessment of the effectiveness of the instruction involved.

B. "Not Tested" Group. These are the entering students who should have been tested and assessed and were not. (It does not include transfer students and others not needing to be tested.) Please note: a successful placement testing and assessment program should essentially eliminate this group.

C. "Not Placed" Group. These are students who need Basic Skills remediation, but do not enroll in the Basic Skills courses they need. An effective developmental

education program, including mandatory placement, would essentially eliminate this group.

D. "Completed" Group. These are students who need remediation in an area (reading or writing or math), enrolled in the needed course or area and completed what was needed and achieved competency. This is the prime group for assessment in Basic Skills, because this group, more than any other, is expected to achieve the outcomes expected as a result of providing Basic Skills remediation and developmental education. It is the "treatment" group against which the other groups will be compared.

E. "Not Completed" Group. These are the students who needed remediation but did not complete what was needed. This can be a comparison group, but by definition, is an unfair comparison. Students in this group are expected to perform poorly on the relevant variables or outcome area. Developmental education programs that cannot demonstrate sizeable improvement between the "Completed" group and the "Not Completed" group are not effective and not achieving acceptable outcomes.

Comparisons

In implementing an effective evaluation of Basic Skills, remedial and or developmental education programs, assessment should be able to demonstrate that the "Completed" group approximates the "No Need" group on a variety of variables including: proficiency (post-testing), retention and persistence, successful performance in subsequent courses, and grade point average. Multiple variables demonstrate that students whom the faculty assess as successful (the Completed group), complete the highest level course in each Basic Skill area (defined as receiving a "C" or better) and perform at a level comparable to those students who did not need remediation in that skill area (the No Need group).

Standards for Assessing Basic Skills Instruction

To place these concepts into a more quantitative format, the following standards may be utilized:

Basic Skills Completion* - 70% of the students enrolled at census in the highest-level Basic Skills course should complete the course with a C or better.

Post Test Competency – 90% of the students who achieve a C or better in the highest level Basic Skills course can demonstrate competency on the post-test where competency is defined at the level needed to meet the prerequisites for college level or defined as college level. (Conceptually, all students achieving a C or better, by definition, should have developed the competencies defined in the course. A 10% leeway is suggested to account for measurement errors in assessment, such as post-

test flaws or some students who are competent but not fully able to demonstrate it that day in that way.)

Successful Performance in Subsequent Courses: Students in the "Completed" group (passed their highest level developmental course with a C or better) will receive grades in subsequent courses comparable to students who did not need. The concept here is essential to remediation: students who develop the competencies in previous remedial work are now adequately prepared to achieve academic success comparable to those students who did not need remediation in that subject area such as English/writing, reading, or mathematics. "Comparable" should be defined as a difference not greater than 10% between those not needing remediation (the "No Need" group, as determined by the initial assessment process for entering students) and the "Completed" group, defined as those who completed the Basic Skills course(s) in the particular skill area. (Warning: using mean grades may not be appropriate since, on average, students not needing remediation, by definition, had higher levels of competency and sometimes much higher level of competency, than that expected of developmental education students who complete their remedial courses.)

Grade Point Average: As described above, this variable has many similarities, but is broader than a comparison of grades in only two courses. Consequently, the standard is similar: students who complete Basic Skills remediation should achieve GPA's comparable to those not needing such assistance. Again, comparability should allow for a minimum disparity (less than 10% difference) and be based on percent achieving a 2.00 GPA or higher for reasons similar to those described for Performance in Subsequent Courses

Persistence: In using this variable, the comparison would again be between those completing Basic Skills and those not needing it. Thus, the standard might be that students completing Basic Skills remediation would have a persistence rate comparable (within 10%) to those not needing remediation.

It is again important to reinforce the use of multiple variables in developing an appropriate and successful assessment effort. The combination of these variables makes for a very powerful assessment methodology appropriately addressing the flaws inherent in using a single variable.

APPENDIX B

A Model of General Education Outcomes

(These were developed and adopted by the faculty of the community colleges of Hawaii.)

GENERAL EDUCATION ACADEMIC SKILL STANDARDS

The following academic skill standards for critical thinking, information retrieval and technology, oral communication, quantitative reasoning, and written communication represent the minimum outcomes expected of students who have completed their General Education experiences. Each course included in the General Education curriculum should address at least one of these academic skill standards.

Critical Thinking

Critical thinking, an analytical and creative process, is essential to every content area and discipline. It is an integral part of information retrieval and technology, oral communication, quantitative reasoning, and written communication.

Students should be able to:

1. Identify and state problems, issues, arguments, and questions contained in a body of information.
2. Identify and analyze assumptions and underlying points of view relating to an issue or problem.
3. Formulate research questions that require descriptive and explanatory analyses.
4. Recognize and understand multiple modes of inquiry, including investigative methods based on observation and analysis.
5. Evaluate a problem, distinguishing between relevant and irrelevant facts, opinions, assumptions, issues, values, and biases through the use of appropriate evidence.
6. Apply problem-solving techniques and skills, including the rules of logic and logical sequence.
7. Synthesize information from various sources, drawing appropriate conclusions.
8. Communicate clearly and concisely the methods and results of logical reasoning.
9. Reflect upon and evaluate their thought processes, value systems, and world views in comparison to those of others.

Information Retrieval and Technology

Information retrieval and technology are integral parts of every content area and discipline.

Students should be able to:

1. Use print and electronic information technology ethically and responsibly.
2. Demonstrate knowledge of basic vocabulary, concepts, and operations of information retrieval and technology.
3. Recognize, identify, and define an information need.
4. Access and retrieve information through print and electronic media, evaluating the accuracy and authenticity of that information.
5. Create, manage, organize, and communicate information through electronic media.
6. Recognize changing technologies and make informed choices about their appropriateness and use.

Oral Communication

Oral communication is an integral part of every content area and discipline.

Students should be able to:

1. Identify and analyze the audience and purpose of any intended communication.
2. Gather, evaluate, select, and organize information for the communication.
3. Use language, techniques, and strategies appropriate to the audience and occasion.
4. Speak clearly and confidently, using the voice, volume, tone, and articulation appropriate to the audience and occasion.
5. Summarize, analyze, and evaluate oral communications and ask coherent questions as needed.
6. Use competent oral expression to initiate and sustain discussions.

Quantitative Reasoning

Quantitative reasoning can have applications in all content areas and disciplines.

Students should be able to:

1. Apply numeric, graphic, and symbolic skills and other forms of quantitative reasoning accurately and appropriately.
2. Demonstrate mastery of mathematical concepts, skills, and applications, using technology when appropriate.
3. Communicate clearly and concisely the methods and results of quantitative problem solving.
4. Formulate and test hypotheses using numerical experimentation.
5. Define quantitative issues and problems, gather relevant information, analyze that information, and present results.
6. Assess the validity of statistical conclusions.

Written Communication

Written communication is an integral part of every content area and discipline.

Students should be able to:

1. Use writing to discover and articulate ideas.
2. Identify and analyze the audience and purpose for any intended communication.
3. Choose language, style and organization appropriate to particular purposes and audiences.
4. Gather information and document sources appropriately.
5. Express a main idea as a thesis, hypothesis or other appropriate statement.
6. Develop a main idea clearly and concisely with appropriate content.
7. Demonstrate mastery of the conventions of writing, including grammar, spelling and mechanics.
8. Demonstrate proficiency in revision and editing.
9. Develop a personal voice in written communication.

APPENDIX C

Examples of Standardized Tests for Assessing Student Learning Outcomes

A. GENERAL EDUCATION

1. Academic Profile (www.ets.org/hea/acpro)

According to Educational Testing Service (ETS), the Academic Profile "focuses on skills developed in introductory courses in the humanities, social sciences and natural sciences. It concentrates on issues, themes and ideas. Questions do not ask for specific information but, instead, test a student's ability to read carefully, make judgments about clarity, correctness, or organization of material, think critically about issues and arguments, and work effectively with mathematics. No specific courses or course patterns are assumed." The Academic Profile consists of two parts: academic content and college skills.

Academic Content

Humanities: tests ability to read carefully passages on various humanities topics but does not measure knowledge in the humanities.

Social Sciences: tests ability to think critically, etc., on subjects related to introductory social science classes, but does not measure knowledge of social science.

Natural Sciences: tests ability to make judgments about argumentations, etc., within themes related to introductory natural science classes, but does not measure science knowledge.

College Skills

College Level Reading: norm-referenced and criterion-referenced subscores are provided.

College Level Writing: norm-referenced and criterion-referenced subscores are provided.

Using Mathematical Data: norm-referenced and criterion-referenced subscores are provided.

2. Collegiate Assessment of General Education (CAAP) (www.act.org/caap)

American College Testing (ACT) designed the CAAP to "assess academic achievement in selected general education skills that are considered critical for further academic work or for functioning well in society." CAAP consists of five multiple choice sections plus an essay component, each of which can be administered alone or in any combination chosen by the institution. The six include:

Writing Skills: measures understanding of standard written English including punctuation, grammar, sentence structure, and rhetorical skills such as strategy, organization and style.

Reading: measures reading comprehension by requiring students to read prose in fiction, humanities, social sciences and natural sciences and then reason, draw conclusions, and generalize beyond the written material.

Mathematics: measures math skills in content areas ranging from pre-algebra to college algebra, emphasizing solution of quantitative problems and stressing applications and quantitative reasoning rather than memorization of formulas, knowledge of techniques, or computation skills.

Critical Thinking: measures the ability to clarify, analyze, evaluate, and extend arguments using a variety of formats including case studies, debates, dialogues, overlapping positions, statistical arguments, experimental results and editorials.

Science Reasoning: measures scientific reasoning skills based on principles taught in all lower-division science course rather than emphasizing factual knowledge. Students are required to interpret graphs, tables and scatter plots, analyze experimental results and compare alternative hypotheses and viewpoints.

Writing/Essay: the only module not using multiple choice questions, measures students' skills in formulating and supporting assertions about a given issue and in organizing and connecting major ideas. Requires two independent essays in response to two short passages.

3. College BASE Test (C-BASE) (arc.missouri.edu/collegebase/text2.html)

C-BASE is a criterion-referenced standardized achievement exam developed at the University of Missouri that assesses student proficiency in English, math, science and social studies. College BASE also measures cognitive processing skills in three cross-disciplinary competencies: interpretative reasoning, strategic reasoning and adaptive reasoning.

Subject Areas

English - 2 Clusters: Reading and Literature (reading comprehension and knowledge of major literary terms, genres, figures and works with emphasis on British and American literature) and Writing (pre-writing, composing, and revising skills using both multiple choice items and an essay).

Math - 3 Clusters: General Math (computation, basic math concepts and statistical reasoning), Algebra (ability to solve linear equations, inequalities and quadratic equations), and Geometry (basic geometrical concepts and ability to use these concepts in calculations).

Science - 2 Clusters: Laboratory/Field Work (applications of the scientific method) and Fundamental Concepts (knowledge of the basic principles of life, the earth and the physical sciences).

Social Science – 2 Clusters: History (knowledge of chronology, historical movements, figures and institutions and causal relationships) and the Social Sciences (knowledge of the principal concepts of geography, economics and political science).

B. VOCATIONAL MAJOR/PROGRAM

In contrast to the tests listed above, the National Occupational Competency Testing Institute (NOCTI) (www.nocti.org) is a testing company that develops tests and provides related services to educational institutions and companies. Currently, over 170 tests are available in a variety of vocational/occupational fields including: business, computers, construction trades, consumer economics, culinary arts, drafting, electrical/electronics, heating/air conditioning, machine trades, maintenance services, media services, and transportation/small engine.

APPENDIX D

SCORING RUBRICS

Rubrics are guidelines for scoring when using performance or authentic assessment.

Example One: The following rubric for scoring essays was developed by the faculty at Kauai Community College in Hawaii. This provides not only a useful scoring rubric for writing, but could also serve as a model for creating scoring rubrics in other academic areas.

A (4 points)	B (3 points)	C (2 points)	D (1 point)
Clearly & effectively responds to assignment.	Response to assignment generally adequate & thorough.	Minimally responds to the assignment.	Does not respond well to assignment.
Demonstrates specific attention to relationship between audience & purpose.	Demonstrates understanding of audience & purpose.	Demonstrates some understanding of audience & purpose.	Demonstrates poor understanding of audience & essay purpose.
Main idea (thesis) very clearly stated & topic is effectively limited.	Main idea clear & topic is limited.	Main idea clear or implicit & topic is partially limited.	Main idea unclear & topic only partially limited.
Thesis supported in body of paper by a variety of relevant facts, examples, & illustrations from experience, references to related readings, etc.	Thesis well supported in body of paper by facts, examples, illustrations though support may not be as vivid as the "A" essay.	Thesis generally supported in body of paper by facts, examples, details. No more than one paragraph with inadequate support.	Thesis supported in body of paper by few facts, examples, details. More than one paragraph with inadequate support.
Organization & structure very evident: major points divided into paragraphs and signaled by use of transitions. Each paragraph has a topic sentence; sentences within each paragraph relate to each other & are subordinate to the topic. Introduction & conclusion effectively related to the whole.	Organization & structure clear. Most major points are separated into paragraphs and signaled by transitions. Paragraphs are built on related sentences that logically develop the main points. No major digressions. Introduction & conclusion effectively related to the whole.	Organization & structure mostly clear. Many major points are separated into paragraphs and signaled by transitions. Most points are logically developed. There may be a few minor digressions but no major ones. Introduction & conclusion are somewhat effective.	The organization & structure must be inferred by the reader. Only some major points are set off by paragraphs and are signaled by transitions. There are some logically connected points. There may be some major digressions. Introduction and conclusion may be lacking or ineffective.

Voice & tone are consistent & appropriate to the audience/purpose.	Voice & tone consistent & appropriate although somewhat generic or predictable in places.	Voice & tone adequate to audience/purpose although often generic or predictable.	Voice noticeably generic or inappropriate (e.g. first person narrative may predominate in an analysis assignment). Tone is often inappropriate.
Full variety of sentence structures used correctly. Word choice interesting, accurate and contributes to the writer's ability to communicate the purpose.	Variety of sentence structures used correctly despite an occasional flaw. Accurate &b varied word choice.	Sentences & word choice predictable. Occasional errors in sentence structure, usage & mechanics do not interfere with writer's ability to communicate the purpose.	Little sentence structure variety; wording predictable; few synonym alternatives used. Errors in sentence structure, usage &B mechanics sometimes interfere with the writer's ability to communicate the purpose.
Few, if any, minor errors in sentence construction, usage, grammar, or mechanics.	There may be a few minor or major errors in sentence construction, usage, grammar, or mechanics.	There are some common errors (major and minor) in sentence construction and mechanics but the writer generally demonstrates a correct sense of syntax.	There are numerous minor errors and some major errors. Sentence construction is below mastery and may display a pattern of errors in usage and mechanics.
Source material is incorporated logically & insightfully. Sources are documented accurately.	Source material incorporated logically. Sources documented accurately.	Source material incorporated adequately & usually documented accurately.	Source material incorporated but sometimes inappropriately or unclearly. Documentation is accurate only occasionally.

Example Two: Tasks in Critical Thinking (ETS) Scoring Rubrics. This was originally developed by New Jersey college faculty as part of a statewide assessment effort.

Core scoring method: Analysis & Inquiry

1. Not proficient: A response was attempted but students scoring at this level either did not understand the questions or their explanations were erroneous, illogical, totally unrelated to the requirements.
2. Limited proficiency: The basic requirements were not met, and responses were very brief, inappropriate, and/or incorrect. Responses were vaguely expressed or inaccurate.
3. Some proficiency: Student understood the question, yet the basic requirements were not met. Responses were vague, incomplete, and/or inappropriate.
4. Fully proficient: The **Core Score** means that the questions were understood and the responses were correct and complete. Students met all basic requirements.
5. Exceeds requirements: Students met all the basic requirements and provided some expansion or extension—citing evidence, providing additional information, or in some other way going beyond what was required.
6. Superior performance: All basic requirements were met and expanded upon; in addition students presented ideas, interpretations, relationships, or examples that showed originality and insight.

Holistic: Communication

1. Not proficient: A paper demonstrating incompetence. It is seriously flawed by very poor organization, very thin development, and/or usage and syntactic errors so severe that meaning is somewhat obscured.
2. Limited proficiency: A paper flawed by weaknesses such as failure to develop the required assignment, poor organization, thin development, using little or inappropriate detail to support ideas, and/or displaying frequent errors in grammar, diction, and sentence structure.
3. Some proficiency: A slightly less than adequate paper that addresses the writing task in a vague or unclear way, shows inadequate organization or development, and/or has an accumulation of errors in grammar, diction, or sentence structure.
4. Fully proficient: This is an adequate paper with only occasional errors or lapses in quality. It is organized, somewhat developed and uses examples to support ideas. It shows a basic command of, and adequate facility in, use of language.
5. Exceeds requirements: A very strong paper with only occasional errors or lapses in quality. It is generally well organized and developed, displaying facility in language, range of vocabulary and some variety in sentence structure.
6. Superior performance: A superior paper that is well organized and developed, using appropriate examples to support ideas. It displays facility in language, range of vocabulary, and variety in sentence structure.

OT Off topic, this designation is for responses that were completely off the assigned topic.

Omit No response was attempted.

More information about rubrics can be found on the following websites.

http://www.wcer.wisc.edu/nise/cl1/flag/
http://edweb.sdsu.edu/webquest/rubrics/weblessons.htm
http://www.siue.edu/~deder/assess/index.html/
http://school.discovery.com/schrockguide/assess.html(Designed for K-12 education, but useful as a model and adaptable for higher education performance assessments)

APPENDIX E

Examples of Two Year College Program Outcomes

I. **Vocational Nursing Program Outcomes (Kingwood College)**

1. **Provide nursing care for clients in structured health care settings who are experiencing common, well-defined health problems with predictable outcomes.**

   a. Assist in the determination of the health status and health needs of clients
   b. Assist in the formulation of goals and a plan of care for the client
   c. Implement plan of care within legal and ethical parameters
   d. Support the implementation of nursing care by applying a working knowledge of client's rights, protecting the rights and dignity of the client and respecting the rights of others to have their own value system.
   e. Assist in the evaluation of the individual client's responses to nursing interventions
   f. Use the problem-solving approach as the basis for decision making in practice
   g. Provide direct basic care to assign multiple clients in structured settings.

2. **Utilize effective communication techniques with clients, families, and health care team members**.

   a. Communicate significant findings to the health team
   b. Recognize and communicate ethical and legal concerns

3. **Contribute to the development and implementation of teaching plan for client with common health care problems.**

4. **Assist in the coordination of human and material resources for the provision of care to assigned clients**.

   a. Participate in discussion relating to the evaluation of client care with health team.
   b. Aid in identifying others who can assist in client care.
   c. Participate in the identification of client needs for referral to appropriate sources of assistance
   d. Participate in activities that support the organizational framework of structured health care settings
   e. Implement established cost containment measures in direct client care.

II. Accounting AAS

Program Objectives

Graduates in the A.A.S. Accounting Program should:

- Have the ability to analyze and prepare basic journal entries.
- Be familiar with the various types and classifications of general ledger accounts used by the typical business activity.
- Possess general computer competence with the ability to input computer data.
- Be able to perform the various steps in the accounting cycle, including the preparation of basic financial statements.
- Have the skills to do a variety of computations and apply logic as needed.
- Possess the ability to apply specific Generally Accepted Accounting Principles in a variety of business situations.
- Have general knowledge of Federal taxation rules for individuals, the differences between various taxable entities such as individuals, corporations and partnerships, and the means and techniques of tax planning and preparation.
- Possess general knowledge of budgeting and product costing techniques and methods related to the control and evaluation of business operations.
- Be familiar with auditing standards and responsibilities, types of audit reports, and auditing procedures and techniques.
- Be aware of and able to use technical and professional journals and publications.
- Possess the ability to communicate effectively in English, both in writing and in speaking.

III. EARLY CHILDHOOD

Program Goals:

1. 0 To provide a comprehensive educational program for people working with young children in child care settings.

1.1 Students choose among the AAS degree, a Certificate for the Child Development Assistant, and a Career Studies Certificate in School Age Child Care; programs are inter-related and mutually supportive.

2.0 To provide for the development of a knowledge base for understanding child development, and the acquisition of skills for preparing and maintaining appropriate programs for children.

2.1 Students will demonstrate knowledge in all areas of child development: physical growth and development, language development, emotional and social development, and cognitive development of children ages 0-12.

2.2 Students will demonstrate skills in working with children who have exceptionalities and/or developmental delays.

2.3 Students will demonstrate knowledge of curriculum development and implementation, supportive of children from ages 0 – 12.

3.0 To imbed all aspects of the program with a multi-cultural perspective, preparing and supporting students to work with diverse populations, in diverse settings, with children 0 – 12.

3.1 Students will demonstrate knowledge and skills in working with diverse groups including children and their families, as well as fellow students and members of the professional community.

4.0 To support dispositions for learning, provide for the attainment of general education goals, and encourage a commitment to life long learning.

4.1 Students will write clearly and in a professional manner, for a variety of purposes such as: curriculum planning, observation reports, research papers.

4.2 Students will read and comprehend materials such as texts, journal articles, web resources, newspaper articles.

4.3 Students will use technology to communicate with instructors and each other; explore resources available through the internet; and become knowledgeable about issues relating to technology and young children.

5.0 To support professional development and credentialing through recognized programs and organizations.

5.1 Students will demonstrate knowledge of national, state and local resources relating to child and family issues, including health and safety, legal rights of families, and intervention and support agencies.

6.0 To provide quality experiences in professional development, for renewal of professional credentials such as CDA and teacher certification, or to fulfill personal goals.

6.1 The program is responsive to community organizations, providing a variety of training and educational needs.

IV. Music Program

Program Goals and Objectives

Students who plan to obtain an A.A.A. degree, to earn a Certificate in Music Recording Technology, or to transfer to a four-year institution to complete the Baccalaureate Degree in Music, Music Education, Performance, or Composition *must* develop specific competencies. Students taking music as an elective or for enrichment *may* achieve these competencies. The competencies are embodied in the following music program goals and objectives:

1. Students will develop the ability to make music of various styles and cultures by performances, class directed studies, and creative improvisation.

   - All students will develop ensemble skills (balance, blend, intonation, style, precision) by performing in various ensembles such as chorus, madrigal singers, concert band, jazz ensembles, and orchestra.

   - Instrumental and keyboard majors will perform major and minor scales and arpeggios as well as perform standard Grade IV (or higher) literature demonstrating good tone, intonation, articulation and musicianship.

   - Vocalists will perform standard repertoire in various languages demonstrating good tone, intonation, style, diction and musicianship.

   - Jazz students, on various levels, will be able to demonstrate improvisational skills, harmonic usage applicable to instrumental and vocal performance, and employ knowledge of structure/form and stylistic distinctions idiomatic to the genre.

   - Keyboard and theory students will improvise simple accompaniments to traditional songs using basic chord progressions, execute rhythms in simple and compound meters, and sight sing notation at various degrees of difficulty.

2. Students will have a working knowledge of Western and World Music: its history, literature, forms and relationship to other arts, philosophies and sciences.

   Students will

   - recognize the characteristics of various styles in music (e.g. Medieval, Renaissance, Baroque, Classical, Romantic and Twentieth Century eras).

- be familiar with major composers and their works ("B minor Mass" of Johann Sebastian Bach, "Le Sacre de Printemps" of Igor Stravinsky and "Concerto for Cootie" of Duke Ellington.)

- relate music to parallel movements in art, science, philosophy, literature and history.

- identify and describe various forms, idioms and compositional devices used in music; (i.e. ground bass, rondo form, sonata, symphony, concerto, etc.).

3. Students will demonstrate an ability to listen to music both analytically and critically.

Students will be able to

- identify monophonic, polyphonic and homophonic textures; Forms (phrases, periods, ABA, AB, sonata, rondo, theme and variations, minuet and trio); duple, triple and quadruple simple and compound meters; and Medieval, Renaissance, Baroque, Classical, Romantic and Twentieth Century styles.

- make aesthetic judgments based upon their critical listening experiences

4. Students will be able to use the language of music; its notational system, terminology, harmony, melody, rhythm and form, for the interpretation, creation and analysis of music.

Students will be able to

- sing, play, and write major and minor scales as well as major, minor, diminished and augmented triads

- sing, analyze and harmonize a Bach chorale styled melody containing modulations and non- harmonic tones

- analyze and utilize music from the common practice (18th century era)

- identify and utilize major trends found in twentieth century compositional techniques

- perform rhythms in both simple and compound meters.

- transcribe into notation melodies, harmonies and rhythms played for them

- demonstrate basic musicianship skills at the keyboard

Students of jazz will be able to relate all of the above objectives to the jazz/pop idiom.

5. Students enrolled in Music Recording Technology courses will have

knowledge of an experience using the recording equipment and theory necessary to produce a professional quality recording.

Students will:

- have experience using pitch transposers, 8 and 16 channel recording/reproducing systems; parametric and graphic equalizers, gaited compressors and limiters, time codes and digital effects devices.

- be able to demonstrate the use of multi- machine sync recording using time code tracks, all elements of the operation of 8 and 16 channel recorder, reproducer systems and the operation and use of audio oscillators, sine and square wave generators, oscilloscopes, sound pressure measuring devices, and real time analyzers.

- be able to demonstrate a knowledge of the theory and application of basic electronic theory, cable construction/ fabrication, machine calibration procedures (including head alignment, biasing and equalization), mechanical and time code editing as well as studio design (including acoustic considerations, sound wave theory and material selections).

Through practical laboratory experience students will utilize their knowledge by preparing and creating master tapes using all of the sound processing equipment, microphone and recorder transports available.

APPENDIX F

Examples of PROGRAM REVIEW

I. Northern Virginia Community College

Northern Virginia Community College determines that their academic programs are effective and that our students are learning by assessing the degree to which:

- students are **learning** the knowledge, skills, and habits of thought necessary to achieve the program/discipline goals and objectives
- the **program/discipline goals** derive from and support the college mission and goals, the general education goals, and the purpose of the program/discipline
- the **curriculum** is coherent, current and consistent
- the **instruction** is effective in enabling student learning
- the **resources** are adequate for the production an environment conducive to student learning

Additionally, through the inclusion of action plans, program/discipline reviews demonstrate that assessment results will be used in the improvement of student learning within the program/discipline. Finally, program/disciplines reviews provide information essential to effective planning and budgeting as well as to process of evaluating our effectiveness as an institution.

I. Student Learning Outcomes

- Student competencies are consistent with the purpose of the program.
- Students are achieving the goals and objectives of the program/discipline.
- Students are achieving the general education goals of the college.
- Student accomplishment is assessed through multiple means.
- Assessment results are used to improve student learning.

II. Program and Discipline Goals

- Program/discipline goals are derived from and support the mission and goals of the college.
- Program/discipline goals support the general education goals of the college.
- Program/discipline goals are consistent with expectations of businesses employing students, transfer institutions receiving students, and the needs of the community served.
- Program goals are consistent with the purpose of the program as stated in the catalogue.
- Discipline goals make explicit the contribution of the discipline to student achievement of the general education goals, the goals of programs of which it is a significant part, and/or other core competencies required of graduates.

III. Curriculum

- Program/discipline course content is consistent with the best practices in the field and the current thinking in the discipline.
- Program/discipline courses display coherence through appropriate sequencing.
- Program/discipline course content is consistent across the college and across various instructional delivery systems.
- The curriculum of the program is comprehensive in addressing program goals, general education goals, and other core competencies required by the college.
- The catalog accurately reflects the purpose and the curriculum of the program/discipline.
- The curriculum of the program/discipline is monitored through the updating of course content summaries.
- Information is sought from employers, graduates, advisory committees, and transfer institutions to assure the currency of the curriculum.

IV. Instruction

- Students experience appropriate methods of instruction that meet their learning needs.
- Instructional modalities are consistent with the best practices in pedagogy and current thinking in learning theory.
- Instructional modalities are demonstrably effective in producing student learning.
- Instructional modalities are appropriate to the purpose and goals of the program/discipline.
- Studs have access to various distance learning opportunities and instructional delivery systems such as web-based courses, computer-based courses, and courses delivered through the Extended Learning Institute.

V. Resources

- Fiscal resources are adequate to maintain and improve the program.
- Instructional support is available, adequate, accessible, and appropriate.
- Classroom and laboratory space is appropriate and adequate.
- Faculty development experiences are appropriate, available, and adequate.
- Faculty participate in improvement/development activities.
- Students express satisfaction with the physical environment such as classroom and labs.
- Students express satisfaction with the accessibility of appropriate learning assistance services and resources.
- Counselors work with faculty to ensure appropriate advisement.
- The materials accessible through the library that support learning are current, available and the library staff is helpful.

II. Kirkwood College

Program Outcomes: Examples of Evaluation Questions. Variables, and Data Sources

	Evaluation Questions	Variables	Possible Data Sources
A.	**Program Completion**		
1.	How many students/trainees completed the training program?	Number of Completions	Program Records
2.	To what extent were students' objectives met? What is degree of completers' satisfaction with training program?	Ratings of Satisfaction	Completers
3.	To what extent did students increase their literacy skills?	Pre/Post Measures of Literacy Skills; Achievement of Training Objectives	Program Records
4.	To what extent did students/trainees increase their vocational skills and knowledge?	Achievement of Vocational Training Objectives and Competencies; Pre/Post Measures of Vocational Skills and Knowledge	Completers; Program Records
5.	How many completers were placed in jobs following training? How many were placed in full-time and part-time training-related jobs?	Number of Completers Placed in Jobs	Completers; Program Reports
6.	What is the average gross wage per hour of completers who were placed in jobs?	Wages Per Hour	Completers
7.	What is the average number of hours worked per week of those placed in jobs?	Number of Hours Worked	Completers
8.	How many completers were placed in or enrolled in further education or training programs following completion of training?	Number of Completers Placed or Enrolled for Further Education or Training.	Completers
B.	**Follow-Up**		
1.	How many program completers were employed six months following initial placement in training-related and non-training related, Full-time and part-time jobs?	Number of Completers Employed	Completers; Employers

2.	What is average gross wage per hour of completers six months following initial placement?	Wages Per Hour	Completers; Employers
3.	What is the average number of hours worked per week of completers six months following initial placement?	Number of Hours Worked	Completers; Employers
4.	How many completers are enrolled in school or other training program six months following initial placement?	Number of Completers Enrolled in School or Training Program	Completers
5.	How many completers are unemployed six months following initial placement?	Number of Completers Unemployed	Completers
6.	How many completers were employed at any time during the six month period following initial placement?	Number of Completers Employed at Any Time During Follow-up Period	Completers; Employers
7.	How many completers obtained job promotions during the six month period following initial placement?	Number of Completers Who Obtained Job Promotions or Higher Level jobs	Completers; Employers
8.	How many completers received wage increases or obtained a higher paying job during the six month period following initial placement?	Number of Completers Who Received Wage Increase	Completers; Employers
9.	How satisfied are former participants with the jobs six months following initial placement?	Ratings of Job Satisfaction	Completers
10.	How satisfied are employers with the vocational and literacy skills of the program completers they hired?	Ratings of Employee Satisfaction with Vocational Skills and English Language Skills	Employers

APPENDIX G

9 Principles of Good Practice for Assessing Student Learning
American Association for Higher Education ASSESSMENT FORUM

1. **The assessment of student learning begins with educational values.** Assessment is not an end in itself but a vehicle for educational improvement. Its effective practice, then, begins with and enacts a vision of the kinds of learning we most value for students and strive to help them achieve. Educational values should drive not only *what* we choose to assess but also *how* we do so. Where questions about educational mission and values are skipped over, assessment threatens to be an exercise in measuring what's easy, rather than a process of improving what we really care about.
2. **Assessment is most effective when it reflects an understanding of learning as multidimensional, integrated, and revealed in performance over time.** Learning is a complex process. It entails not only what students know but what they can do with what they know; it involves not only knowledge and abilities but values, attitudes, and habits of mind that affect both academic success and performance beyond the classroom. Assessment should reflect these understandings by employing a diverse array of methods, including those that call for actual performance, using them over time so as to reveal change, growth, and increasing degrees of integration. Such an approach aims for a more complete and accurate picture of learning, and therefore firmer bases for improving our students' educational experience.
3. **Assessment works best when the programs it seeks to improve have clear, explicitly stated purposes.** Assessment is a goal-oriented process. It entails comparing educational performance with educational purposes and expectations -- those derived from the institution's mission, from faculty intentions in program and course design, and from knowledge of students' own goals. Where program purposes lack specificity or agreement, assessment as a process pushes a campus toward clarity about where to aim and what standards to apply; assessment also prompts attention to where and how program goals will be taught and learned. Clear, shared, implementable goals are the cornerstone for assessment that is focused and useful.
4. **Assessment requires attention to outcomes but also and equally to the experiences that lead to those outcomes.** Information about outcomes is of high importance; where students "end up" matters greatly. But to improve outcomes, we need to know about student experience along the way -- about the curricula, teaching, and kind of student effort that lead to particular outcomes. Assessment can help us understand which students learn best under what conditions; with such knowledge comes the capacity to improve the whole of their learning.
5. **Assessment works best when it is ongoing not episodic.** Assessment is a process whose power is cumulative. Though isolated, "one-shot" assessment can be better than none, improvement is best fostered when assessment entails a linked series of activities undertaken over time. This may mean tracking the process of individual students, or of cohorts of students; it may mean collecting the same examples of student performance or using the same instrument semester after semester. The point is to monitor progress toward intended goals in a spirit of continuous improvement. Along the way, the assessment process itself should be evaluated and refined in light of emerging insights.
6. **Assessment fosters wider improvement when representatives from across the educational community are involved.** Student learning is a campus-wide responsibility, and assessment is a way of enacting that responsibility. Thus, while assessment efforts may

start small, the aim over time is to involve people from across the educational community. Faculty play an especially important role, but assessment's questions can't be fully addressed without participation by student-affairs educators, librarians, administrators, and students. Assessment may also involve individuals from beyond the campus (alumni/ae, trustees, employers) whose experience can enrich the sense of appropriate aims and standards for learning. Thus understood, assessment is not a task for small groups of experts but a collaborative activity; its aim is wider, better-informed attention to student learning by all parties with a stake in its improvement.

7. **Assessment makes a difference when it begins with issues of use and illuminates questions that people really care about.** Assessment recognizes the value of information in the process of improvement. But to be useful, information must be connected to issues or questions that people really care about. This implies assessment approaches that produce evidence that relevant parties will find credible, suggestive, and applicable to decisions that need to be made. It means thinking in advance about how the information will be used, and by whom. The point of assessment is not to gather data and return "results"; it is a process that starts with the questions of decision-makers, that involves them in the gathering and interpreting of data, and that informs and helps guide continuous improvement.
8. **Assessment is most likely to lead to improvement when it is part of a larger set of conditions that promote change.** Assessment alone changes little. Its greatest contribution comes on campuses where the quality of teaching and learning is visibly valued and worked at. On such campuses, the push to improve educational performance is a visible and primary goal of leadership; improving the quality of undergraduate education is central to the institution's planning, budgeting, and personnel decisions. On such campuses, information about learning outcomes is seen as an integral part of decision making, and avidly sought.
9. **Through assessment, educators meet responsibilities to students and to the public.** There is a compelling public stake in education. As educators, we have a responsibility to the publics that support or depend on us to provide information about the ways in which our students meet goals and expectations. But that responsibility goes beyond the reporting of such information; our deeper obligation -- to ourselves, our students, and society -- is to improve. Those to whom educators are accountable have a corresponding obligation to support such attempts at improvement.

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